
FOR UGF FEEDER (S/S 8710) BAY

GIS BAY REF. = D03


UGF
8710

- Required Materials For Interfacing work. (AS PER MARUP).

- New Terminal Block X100 SH: (24, 25, 27, 37, 13, 31A)
- New CT Terminal Block X27A SH (34)
- Auxiliary relay VX2 SH: (37)
- Additional Aux. contacts (N.C.) For MCBs F21, F25 (SH: 37)

132kV GIS LCC
SCHEMATIC DRAWINGS

SUBSTATION 8709

		1	2	3	4	5	6	7	8	9	10						
A	PAGE :	DESIGNATION					REVISION AND DATE										
							REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H		
	0	COVER					10.JULY.12										
	1	LIST OF CONTENTS															
	1A	LIST OF CONTENTS															
	2	LEGEND OF SYMBOLS															
	3	GAS SCHEME DIAGRAM															
	4	LIST OF APPARATUS, LCC															
	4A	LIST OF APPARATUS, LCC															
B	4B	LIST OF APPARATUS, LCC															
	4C	LIST OF APPARATUS, LCC															
	5	LIST OF APPARATUS, MECHANISM															
	6	OUTLINE-INTERNAL ARRANGEMENT OF LCC															
	7	FRONT ARRANGEMENT OF LCC															
	8	OPERATION ONE LINE DIAGRAM															
	9	INTERLOCK DIAGRAM															
C	10	MAIN CIRCUIT															
	11	SWITCHING DIAGRAM															
	12	AC POWER SUPPLY & HEATING/LIGHTING CIRCUIT															
	13	DC POWER SUPPLY															
	14	LOCAL POSITION INDICATOR															
	15	OPERATION INTERLOCK															
	16	MOTOR DRIVE CIRCUIT															
D	17	INTERLOCK OF BUSBAR DISCONNECTOR(304/306)															
	18	BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(304/301Y): CONTROLLING															
	19	BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(306/301Z): CONTROLLING															
	20	LINE DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(303/301X): CONTROLLING															
	21	LINE EARTH SWITCH(301): CONTROLLING/ BUSBAR DISCONNECTOR(304/306): AUX. RELAY															
	22	SIGNALLING FOR INPUT BCU 1															
	23	SIGNALLING FOR INPUT BCU 2															
E	24	CB ANTI-PUMPING/CLOSE/TRIP CIRCUIT															
	25	CB CONTROLLING & PT SELECTION															
	26	AUXILIARY CONTACTS 1															
	27	AUXILIARY CONTACTS 2															
	28	DS/ES SWITCHING INCOMPLETE & GAS PRESSURE METERING															
	29	SIGNALLING : INPUT ANUNCIATOR 1															
	30	SIGNALLING : INPUT ANUNCIATOR 2															
F	31	SIGNALLING : OUTPUT ANUNCIATOR 1															
	31A	SIGNALLING : OUTPUT ANUNCIATOR 2															
	32	SIGNALLING : VIEW/FRONT ANUNCIATOR 1,2															
	33	SIGNALLING : FRONT COMMENT ANUNCIATOR 1,2															
	34	SHORT CIRCUIT AND DISCONNECTING CT'S(CT1) & CT SECONDARY BOX TERMINAL/LABELLING															
	34A	SHORT CIRCUIT AND DISCONNECTING CT'S(CT1) & CT SECONDARY BOX TERMINAL/LABELLING					10.JULY.12										
G	AS-BUILT					SEC-COA 132kV/13.8kV SUBSTATION #8709					 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA					SHEET NO. 01 of 37 NEXT 01A	
	BY _____ DATE _____ DRAWN BY D.H.HAN CHECKED BY C.Y.HONG DATE STARTED 10.JULY.12 DATE COMPLETED _____ OPRG. DEPT. _____ ENG. DEPT. _____					LIST OF CONTENTS LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY RIYADH SAUDI ARABIA					CONTRACT NO. 11131113/00 INDEX P PLANT NO. C421 DRAWING NUMBER CA -323942 REV. NO. 00						

1		2		3		4		5		6		7		8		9		10		
A	PAGE :	DESIGNATION								REVISION AND DATE										
										REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H		
	36	VOLTAGE TRANSFORMER(VT-L1)								10.JULY.12										
	37	TERMINAL BOX OF VT-L1								10.JULY.12										
B																				
C																				
D																				
E																				
F																				
G																				

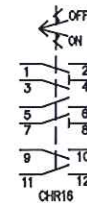
AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa		SHEET NO. 01A of 37
		DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG	LIST OF CONTENTS						NEXT 02
		DATE STARTED	10.JULY.12	DATE COMPLETED		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER
		OPRG. DEPT.		ENG. DEPT.		RIYADH SAUDI ARABIA		11131113/00		P	C421	CA -323942
REV. NO.	DATE	DESCRIPTION										REV. NO. 00

1.LEGEND OF SYMBOLS

	M	MINIATURE CIRCUIT BREAKER		S	BREAK CONTACT GAS DENSITY METER		CT	CURRENT TRANSFORMER
	F	THERMAL RELAY		S	REED BREAKING CONTACT NOT OPERATED		VT	VOLTAGE TRANSFORMER
	S	LATE MAKE CONTACT		M	MOTOR OPERATED			
	S	EARLY BREAK CONTACT		-	EARTH			
	S	EARLY MAKE CONTACT		Y	OPERATING MAGNET COIL			
	S	LATE BREAK CONTACT		M	MOTOR AC 3 PHASE			
	S	CHANGE OVER SWITCH		T	RELAY SLOW OPERATING			
	S	PUSH BUTTON MAKE CONTACT		-	OP-AMP			
	S	PUSH BUTTON BREAK CONTACT		P	CONNECTING POINT CT'S			
	S	DOOR SWITCH		T	MAKE CONTACT DELAYED WHEN OPERATING			
	S	BLOCKING CONTACT		T	BREAK CONTACT DELAYED WHEN OPERATING			
	-	CHANGE OVER CONTACT OPERATED BY UNDER PRESSURE		T	MAKE CONTACT DELAYED WHEN RELEASING			
	S	CONTROL SWITCH		T	BREAK CONTACT DELAYED WHEN RELEASING			
	S	MAKE CONTACT GAS DENSITY METER						

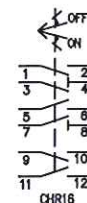
	K	RELAY		-	DISCONNECT WITH MOTOR MECHANISM			
	K	FLAG RELAY		-	EARTH SWITCH WITH MOTOR MECHANISM			
	Y	CLOSING OR TRIPPING COIL		-	CIRCUIT BREAKER			
	P	PULSE COUNTER		CT	CURRENT TRANSFORMER			
	K	LATCHING RELAY		-	CABLE HEAD			
	M	DC - MOTOR		-	BUSHING			
	-	ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		VTL	3 PHASE INDUCTIVE TYPE VOLTAGE TRANSFORMER			
	H	ANNUNCIATOR		-	TERMINAL (NORMAL TYPE)			
	-	OPTO - COUPLER		-	TERMINAL (KNIFE TYPE)			
	R	RESISTOR		IT	ISOLATING TERMINAL			
	D	RECTIFYING FUNCTION		-	BRIDGE OVER TERMINALS			
	H	SIGNAL LAMP & DISCREPANCY SWITCH LAMP		-	SEPARATE PLATE NEXT TO TERMINALS			
	E	FLUORESCENT LAMP		-	GAS GAUGE (GAS FILLED STATE)			
	H	DISCREPANCY SWITCH LAMP (FOR CB)						

2.DETAIL OF CONTROL SWITCHES



DETAIL OF CONTROL SWITCHES FOR DS/ES

CONTACT	OFF	OFF 45°	ON	ON 45°	FUNCTION
1-2		X			OPEN
3-4	X	X			INDICATION
5-6			X	X	CLOSE
7-8			X	X	INDICATION
9-10	X				OPEN
11-12			X		CLOSE

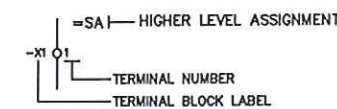


DETAIL OF CONTROL SWITCH FOR CB

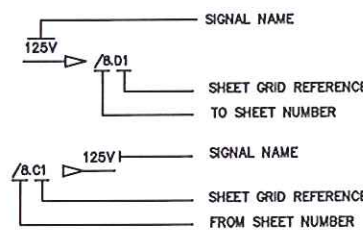
CONTACT	OFF	OFF 45°	ON	ON 45°	FUNCTION
1-2		X			OPEN
3-4	X	X			INDICATION
5-6			X	X	CLOSE
7-8			X	X	INDICATION
9-10	X				SPARE
11-12			X		SPARE

3.DRAWING PRINCIPLES

PRESENTATION OF TERMINALS



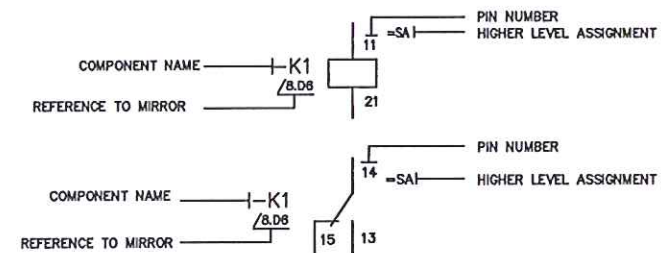
PRESENTATION OF SHEET TO SHEET REFERENCE



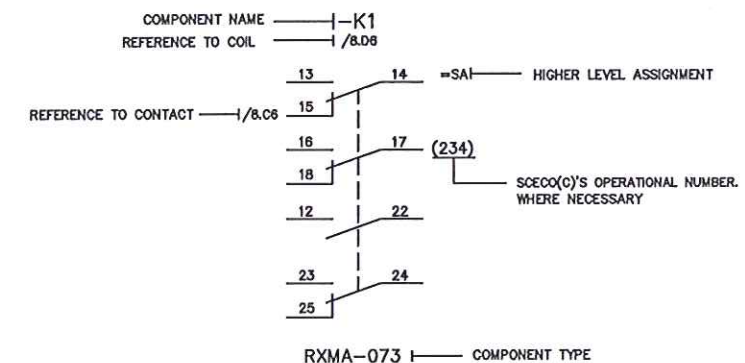
PRESENTATION ...

<=G1 | HIGHER LEVEL ASSIGNMENT

PRESENTATION OF COMPONENTS



5. PRESENTATION OF THE MIRROR



AS-BUILT

BY

DATE

SEC-COA 132kV/13.8kV SUBSTATION #8709

LEGEND OF SYMBOLS

LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY

RIYADH

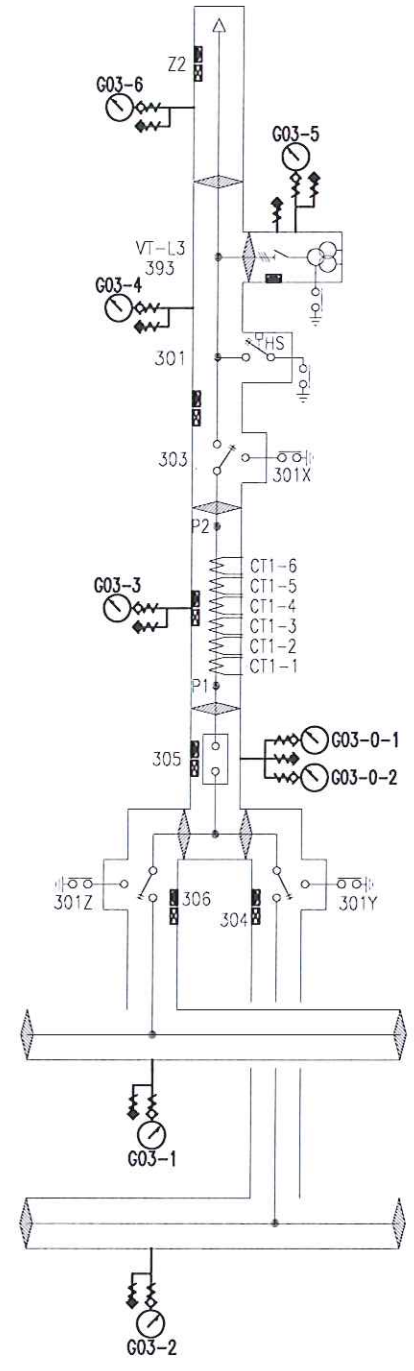
SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 02 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323942	00

SEC-D (2004/10)

EDMS VECTOR SECE00

UGF
(S/S 8710)
(D03)



NOTE

1. RATED SF6 GAS PRESSURE
CB=600 kPa (at 20°C)
MAIN BUS=400 kPa (at 20°C)
OTHERS=400 kPa (at 20°C)
2. SETTING PRESSURE (at 20°C) OF DENSITY DETECTOR IS AS FOLLOWS

EQUIPMENT	SF6 GAS PRESSURE at 20°C degree	DESCRIPTION
CB	800 kPa	HIGH PRESSURE ALARM
	550 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	500 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)
OTHERS (DS,ES,CT VT,BUS,etc)	500 kPa	HIGH PRESSURE ALARM
	370 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	350 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)

* ACCURACY RANGE : ±1% at 20°C, ±2.5% at -20°C ~ 60°C

3. GAS SECTION NUMBER OF GAS MONITORING IS AS FOLLOWS

DESCRIPTION	
GIS BAY No. $\frac{G \times X \times}{-}$	GAS COMPARTMENT No. $\frac{X}{-}$

4. BURSTING PRESSURE OF PRESSURE RELIEF DEVICE

CB = 1500 kPa
OTHERS = 1000 kPa

LEGEND

SYMBOL	REMARK
	NON-RETURN VALVE (NORMALLY OPEN)
	NON-RETURN VALVE (NORMALLY CLOSED)
	GAS PRESSURE GAUGE
	INSULATION SPACER (GAS TIGHT)
	INSULATION SPACER (GAS THROUGH)
	ABSORBENT ZEORAM
	RUPTURE DISC

AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/13.8kV SUBSTATION #8709	
GAS SCHEME DIAGRAM	
LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 03 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323942	00

	1	2	3	4	5	6	7	8	9	10
A			SER.NO.	DESIGNATION	DESCRIPTION					
			1	-F0	MINIATURE CIRCUIT BREAKER, DOUBLE POLE 16A, SHUNT TRIP FOR ES/DS MOTOR PROTECTION	/13.A7	1	S202P-K16+S2C-A2 +S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0002 + 2CDS200912R0001
B			2	-F1	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(304/301Y) MOTOR DC SUPPLY	/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *3
			3	-F2	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(306/301Z) MOTOR DC SUPPLY	/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *3
			4	-F3	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR LINE DISCONNECTOR WITH EARTH SWITCH(303/301X) MOTOR DC SUPPLY	/13.A9	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *3
			5	-F4	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR LINE EARTH SWITCH(301) MOTOR DC SUPPLY	/13.A10	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *3
			6	-F5	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR DS / ES DC CONTROL SUPPLY FOR FRONT BUSBAR	/13.B7	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *2
			7	-F8	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR SIGNALING ALARMS DC SUPPLY	/13.B8	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *2
			8	-F9	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(305) PUMP MOTOR DC CONTROL SUPPLY	/13.B9	1	S202P-K16 +S2C-H6R+S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0001 *2
			9	-F10	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(305) ANTIPUMPING DC CONTROL SUPPLY	/13.B9	1	S202P-K16 +S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0001
			10	-F11	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(305) CLOSING / OPENING OPERATIONS DC SUPPLY	/13.B10	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0001 *2
			11	-F12	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(305) TRIP CIRCUIT 1 DC SUPPLY	/13.C7	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0001 *2
C			12	-F13	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(305) TRIP CIRCUIT 2 DC SUPPLY	/13.C8	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0467 + 2CDS200912R0001 *2
			13	-F14	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR ANNUNCIATOR AC 220V SUPPLY	/12.D2	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *2
			14	-F15	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR LCC LIGHTING AC 220V SUPPLY	/12.D3	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *2
			15	-F16	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR POWER SOCKET AC 127V SUPPLY	/12.F3	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CDS 282 001 R0377 + 2CDS200912R0001 *2
			16	-F50	THERMAL RELAY FOR CB SPRING CHARGING MOTOR. SETTING RANGE 7~10A (SET:8.5A)	/16.F7	1	MT	LS	MT-L8.5
			17	-E1,-E2	FLUORESCENCE LAMP. AC 220V. 20W	/12.B4	2		J-SUNG-ELEC.CO	
			18	-H1	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC , SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s , 40 INPUT/OUTPUT	/32.A3	1	UC625	RTK	UC625-40YW-HH-024-R-M3
			19	-H2	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC , SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s , 32 INPUT/OUTPUT	/32.A3	1	UC625	RTK	UC625-32YW-HH-024-R-M3
			20	-H40	SIGNALING LAMP FOR LOCAL CONTROL,LED TYPE,YELLOW LAMP,WHITE CAP,250 DC 125V/24V	/14.C2	1	KGPH	KG AUTO	KGPH-D1Y/W
			21	-K2	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET	/13.C9	1	RXSFI	ABB	RK 271 019-AN
D			22	-K3	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET	/24.F7	1	RXSFI	ABB	RK 271 019-AN
			23							
			24							
			25	-K6,-K7	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT WITH 4NO AUXILIARY CONTACT	/14.D1	1	MR	LS	MR-40(40)+UA-4(40)
			26	-K10	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT	/14.F1	1	MR	LS	MR-40(40)
			27	-K8	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET	/25.E10	1	RXSFI	ABB	RK 271 019-AN
			28	-K9	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET	/24.F4	1	RXSFI	ABB	RK 273019-AN
			29	-K11	CONTACTOR FOR BUSBAR DISCONNECTOR (304) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F8	1	MC	LS	MC-9b+UA-4(31)
			30	-K12	CONTACTOR FOR BUSBAR DISCONNECTOR (304) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F8	1	MC	LS	MC-9b+UA-4(31)
			31	-K14C -K140	LATCHING RELAY FOR MULTIPLING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,304) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.	/21.C6	2	MR	LS	MR-40(31)+UA-4(40)
E										
F										
G										

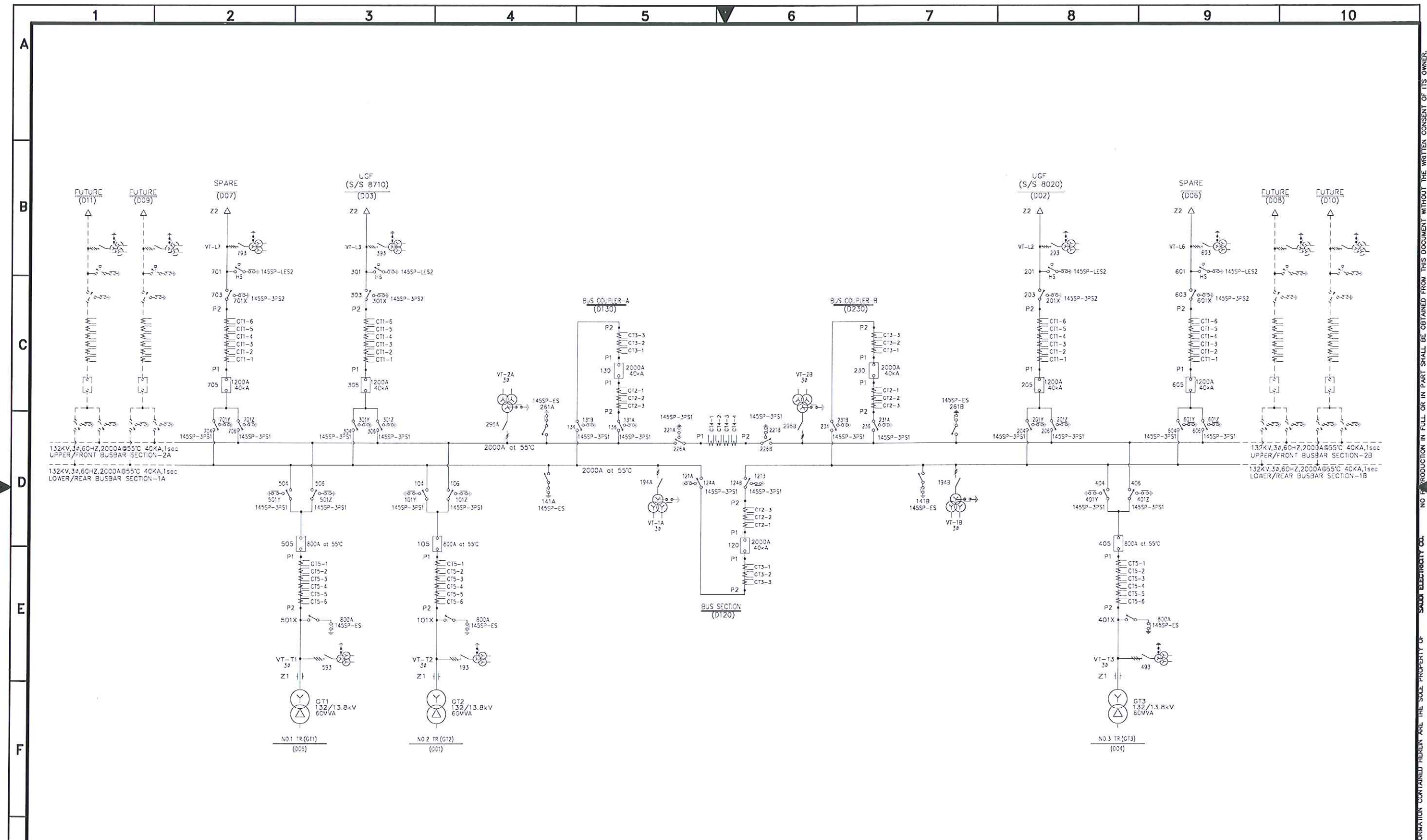
AS-BUILT		BY _____	DATE _____
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/13.8kV SUBSTATION #8709	
LIST OF APPARATUS, LCC	
LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 04 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323942	00

1	2	3	4	5	6	7	8	9	10
		SER.NO.	DESIGNATION	DESCRIPTION	SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
		31	-K21	CONTACTOR FOR MAINTENANCE EARTH SWITCH (301Y) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F9	1	MC	LS	MC-9b+UA-4(22)
		32	-K22	CONTACTOR FOR MAINTENANCE EARTH SWITCH (301Y) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F10	1	MC	LS	MC-9b+UA-4(22)
		33	-K31	CONTACTOR FOR BUSBAR DISCONNECTOR (306) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)
		34	-K32	CONTACTOR FOR BUSBAR DISCONNECTOR (306) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)
		35	-K34C -K340	LATCHING RELAY FOR MULTIPLING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,306) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.	/21.F6	2	MR	LS	MR-4D(31)+UA-4(40)
		36	-K41	CONTACTOR FOR MAINTENANCE EARTH SWITCH (301Z) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F9	1	MC	LS	MC-9b+UA-4(22)
		37	-K42	CONTACTOR FOR MAINTENANCE EARTH SWITCH (301Z) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F10	1	MC	LS	MC-9b+UA-4(22)
		38	-K51	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (305), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)
		39	-K52	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (305), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)
		40	-K43	AUXILIARY RELAY FOR CHECKING MOTOR OVER-TIME RUNNING (ABOVE 15MIN), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/16.F3	1	MR	LS	MR-4D(22)+AU4(22)
		41	-K44	CONTACTOR FOR MOTOR OF CB,POWER CONSUMPTION 5W, DC 125V,4NO+1NC	/16.F4	1	MC	LS	MC-22
		42	-K37	AUXILIARY RELAY FOR ANTI-PUMPING OF CIRCUIT BREAKER (305), POWER CONSUMPTION 9W, DC 125V, 2NO+2NC	/24.F2	1	HMT	HYUNDAI	HMT22(22)
		43	-K45	AUXILIARY RELAY FOR CB GAS PRESSURE CLOSING LOCKOUT(550 kPa) POWER CONSUMPTION 5W, DC 125V, 2NO+2NC	/25.E6	1	MR	LS	MR-4D(22)+UA-2(02)
		44	-K46	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT (TRIP COIL1, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC	/24.F7	1	MR	LS	MR-4D(22)+UA-2(02)
		45	-K47	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT (TRIP COIL2, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC	/24.F10	1	MR	LS	MR-4D(22)+UA-2(02)
		46	-K33	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (305), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/24.F3	1	MR	LS	MR-4D(22)
		47	-K61	CONTACTOR FOR LINE DISCONNECTOR (303) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/20.F8	1	MC	LS	MC-9b+UA-4(31)
		48	-K62	CONTACTOR FOR LINE DISCONNECTOR (303) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/20.F8	1	MC	LS	MC-9b+UA-4(31)
		49	-K71	CONTACTOR FOR MAINTENANCE EARTH SWITCH(301X) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/20.F9	1	MC	LS	MC-9b+UA-4(22)
		50	-K72	CONTACTOR FOR MAINTENANCE EARTH SWITCH(301X) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/20.F10	1	MC	LS	MC-9b+UA-4(22)
		51	-K81	CONTACTOR FOR LINE EARTH SWITCH (301) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/21.F1	1	MC	LS	MC-9b+UA-4(31)
		52		(BLANK)					
		53		(BLANK)					
		54		(BLANK)					
AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709					
				LIST OF APPARATUS, LCC					
				LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY					
				RIYADH SAUDI ARABIA					
DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		DATE STARTED 10.JULY.12 DATE COMPLETED		CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
DATE STARTED 10.JULY.12 DATE COMPLETED		OPRG. DEPT. ENG. DEPT.		DRAWING NUMBER CA -323942		REVISION NO. 00		SHEET NO. 04A of 37	
REV. NO. DATE DESCRIPTION									

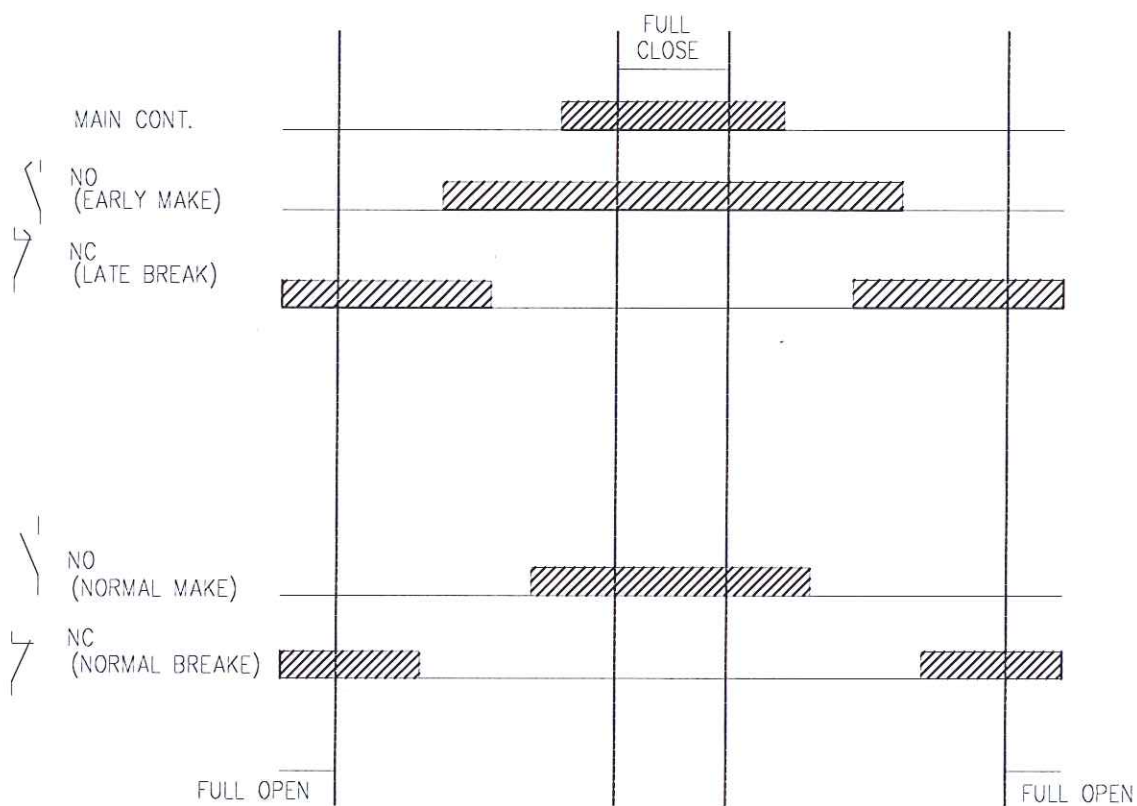


AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 08 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		OPERATION ONE LINE DIAGRAM		National Grid sa		NEXT 09		REV. NO.	
00			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
REV. NO.			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		DRAWING NUMBER CA -323942		REV. NO. 00		SEC-D (2004/10)	
DATE			DESCRIPTION				EDMS		VECTOR		SECE00	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

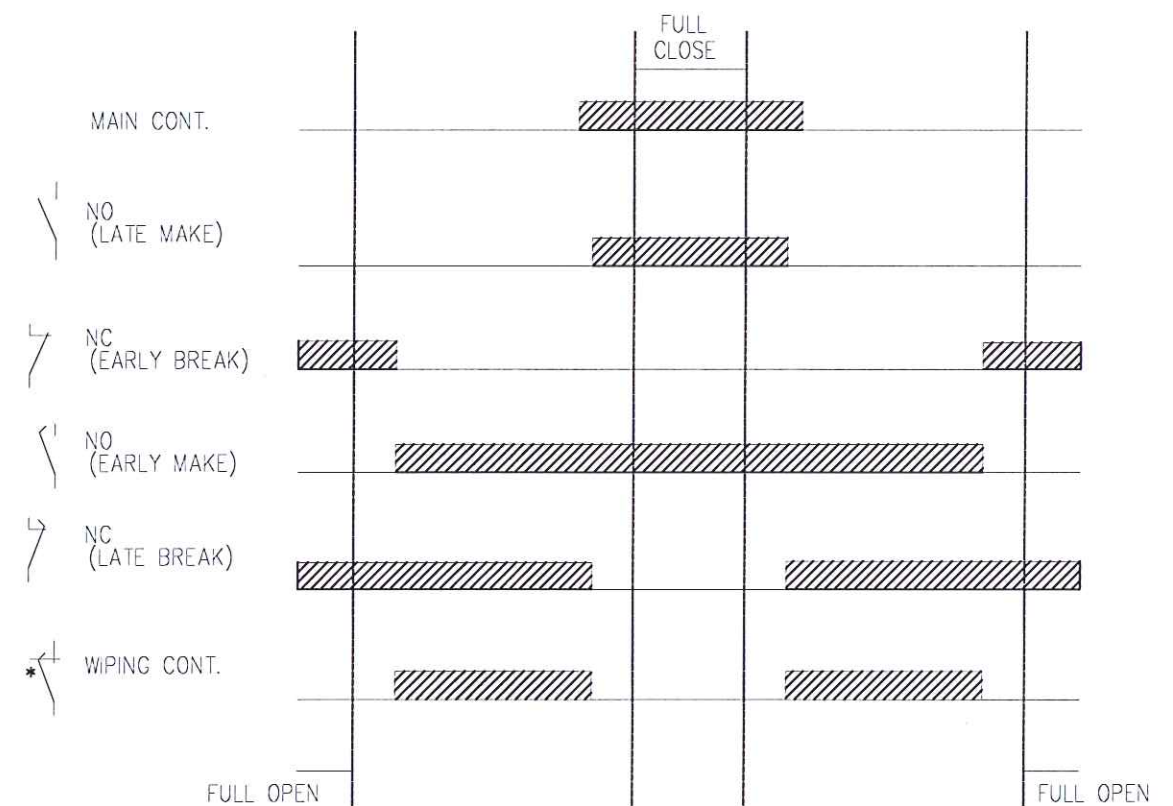
1. SWITCHING DIAGRAM FOR CIRCUIT BREAKER

▨ : CONTACT CLOSED



2. SWITCHING DIAGRAM FOR DS & ES

▨ : CONTACT CLOSED



AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

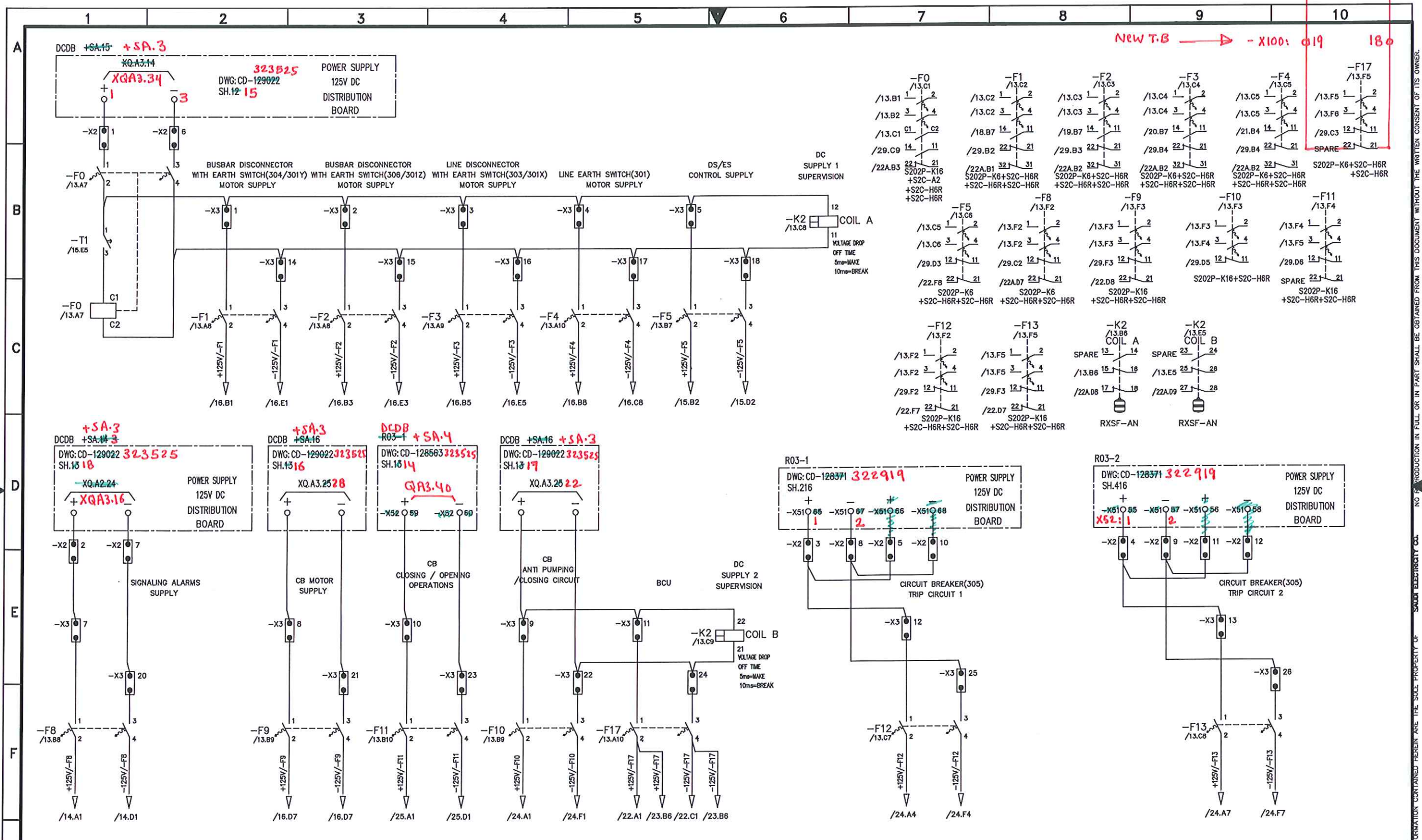
DRAWN BY D.H.HAN CHECKED BY C.Y.HONG
 DATE STARTED 10.JULY.12 DATE COMPLETED
 OPRG. DEPT. ENG. DEPT.

SEC-COA 132kV/13.8kV SUBSTATION #8709
 SWITCHING DIAGRAM
 LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
 RIYADH SAUDI ARABIA

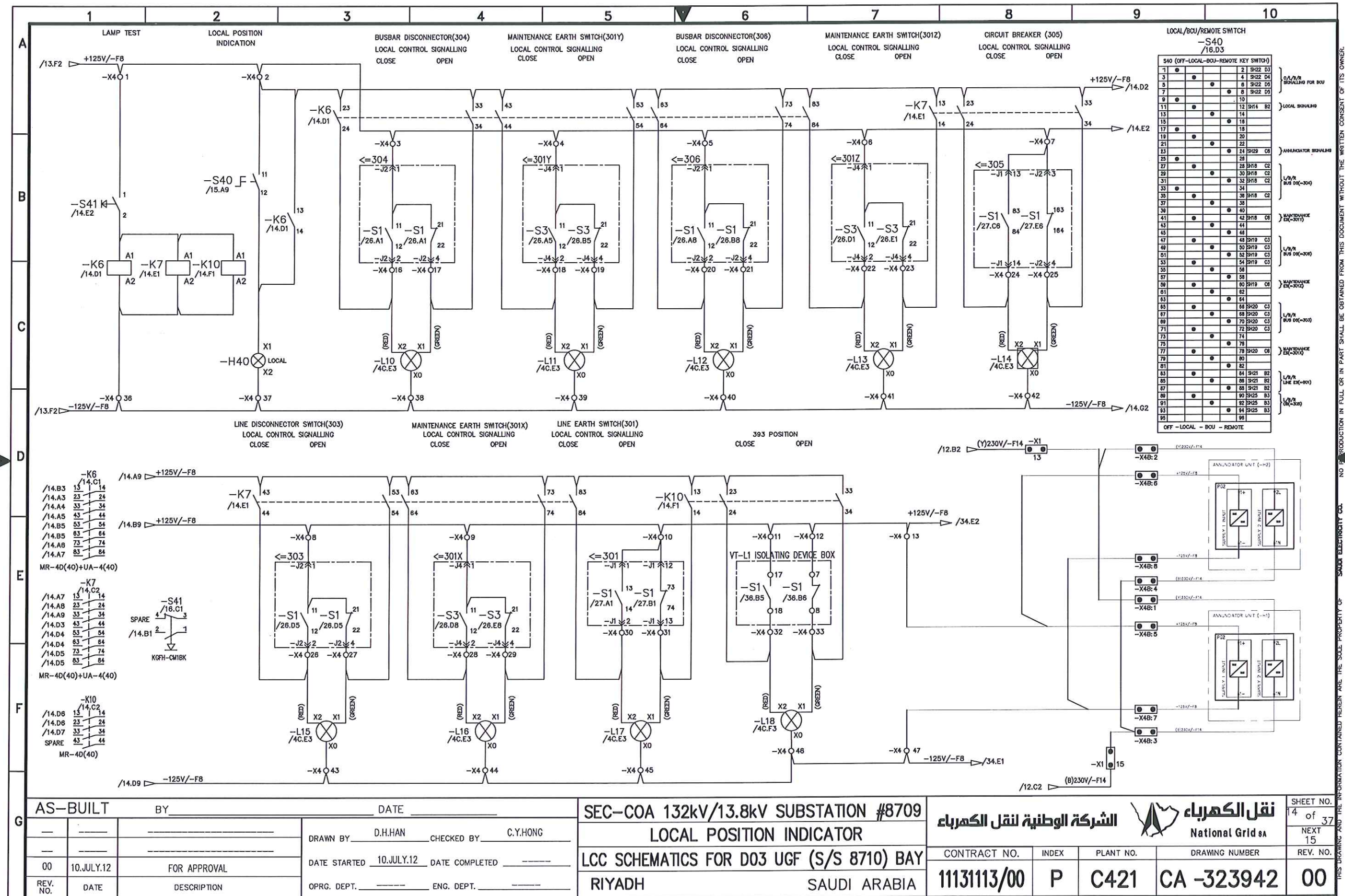
الشركة الوطنية لنقل الكهرباء				National Grid sa		SHEET NO.
CONTRACT NO.				INDEX		11 of 37
11131113/00				PLANT NO.		NEXT 12
P				DRAWING NUMBER		REV. NO.
C421				CA -323942		00

SH:232
DWG. CD-323015
BCU DC FAIL

+SAS 31F-3
X51:26
X41:18



AS-BUILT			BY			DATE			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 13 of 37		
									DC POWER SUPPLY			National Grid SA			NEXT 14		
									LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY			CONTRACT NO.			INDEX		
									RIYADH			11131113/00			P		
									SAUDI ARABIA			C421			CA -323942		
															REV. NO.		
															00		



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

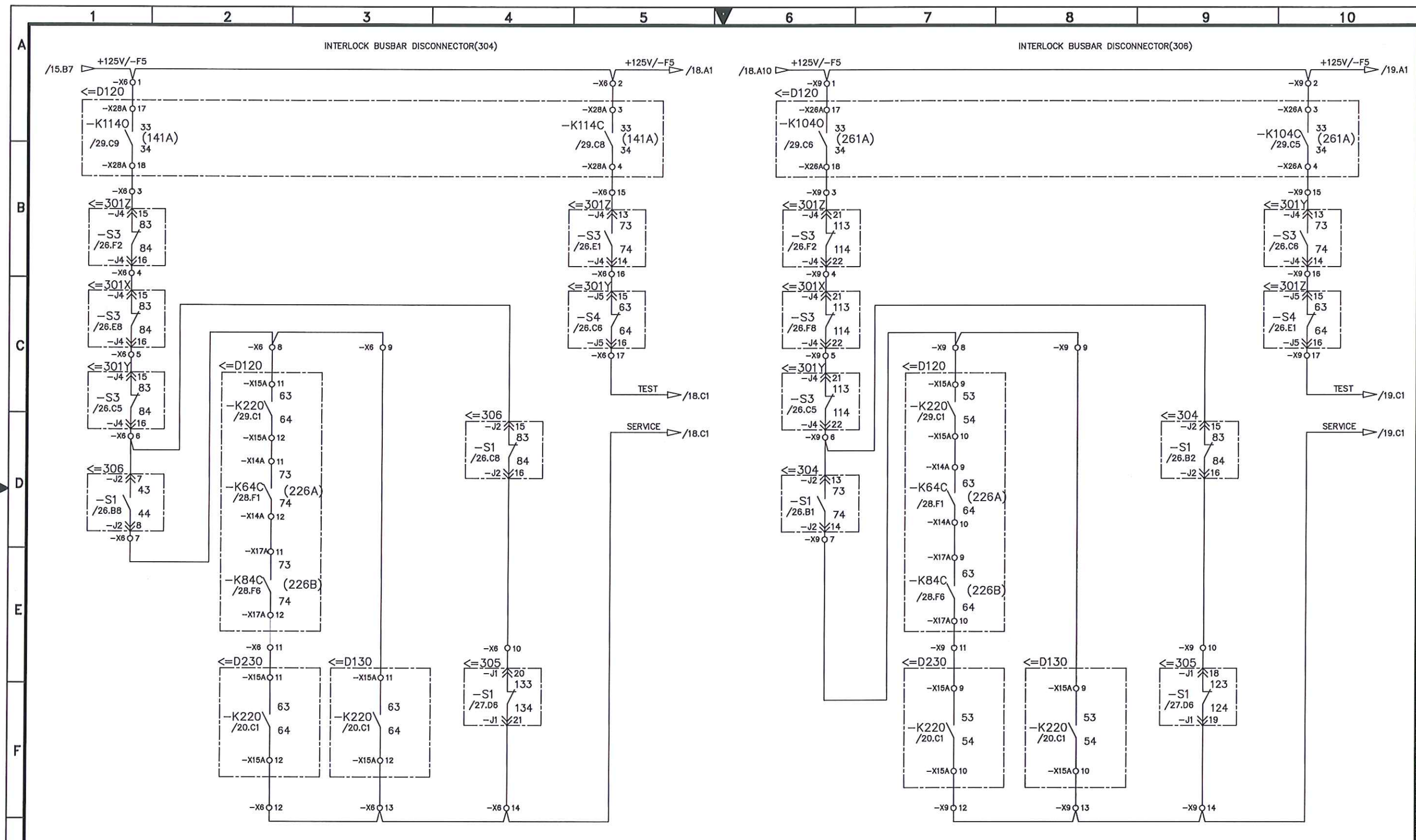



SHEET NO. 14 of 37		NEXT 15		REV. NO. 00	
CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
DRAWING NUMBER CA-323942		DRAWING NUMBER		DRAWING NUMBER	

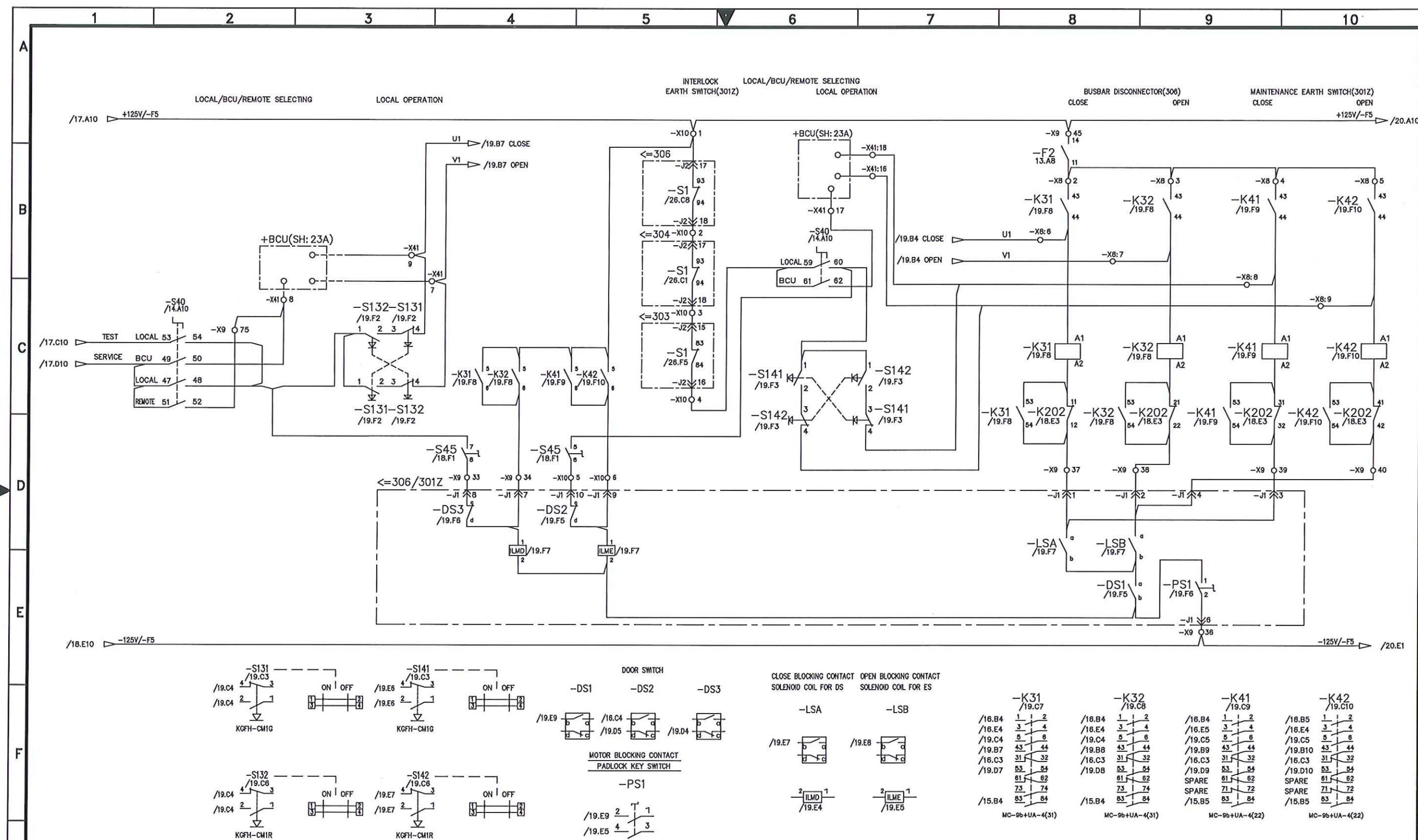
SEC-COA 132kV/13.8kV SUBSTATION #8709
 LOCAL POSITION INDICATOR
 LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
 RIYADH SAUDI ARABIA

AS-BUILT BY _____ DATE _____
 DRAWN BY D.H.HAN CHECKED BY C.Y.HONG
 DATE STARTED 10.JULY.12 DATE COMPLETED _____
 OPRG. DEPT. _____ ENG. DEPT. _____

REV. NO.	DATE	DESCRIPTION
00	10.JULY.12	FOR APPROVAL



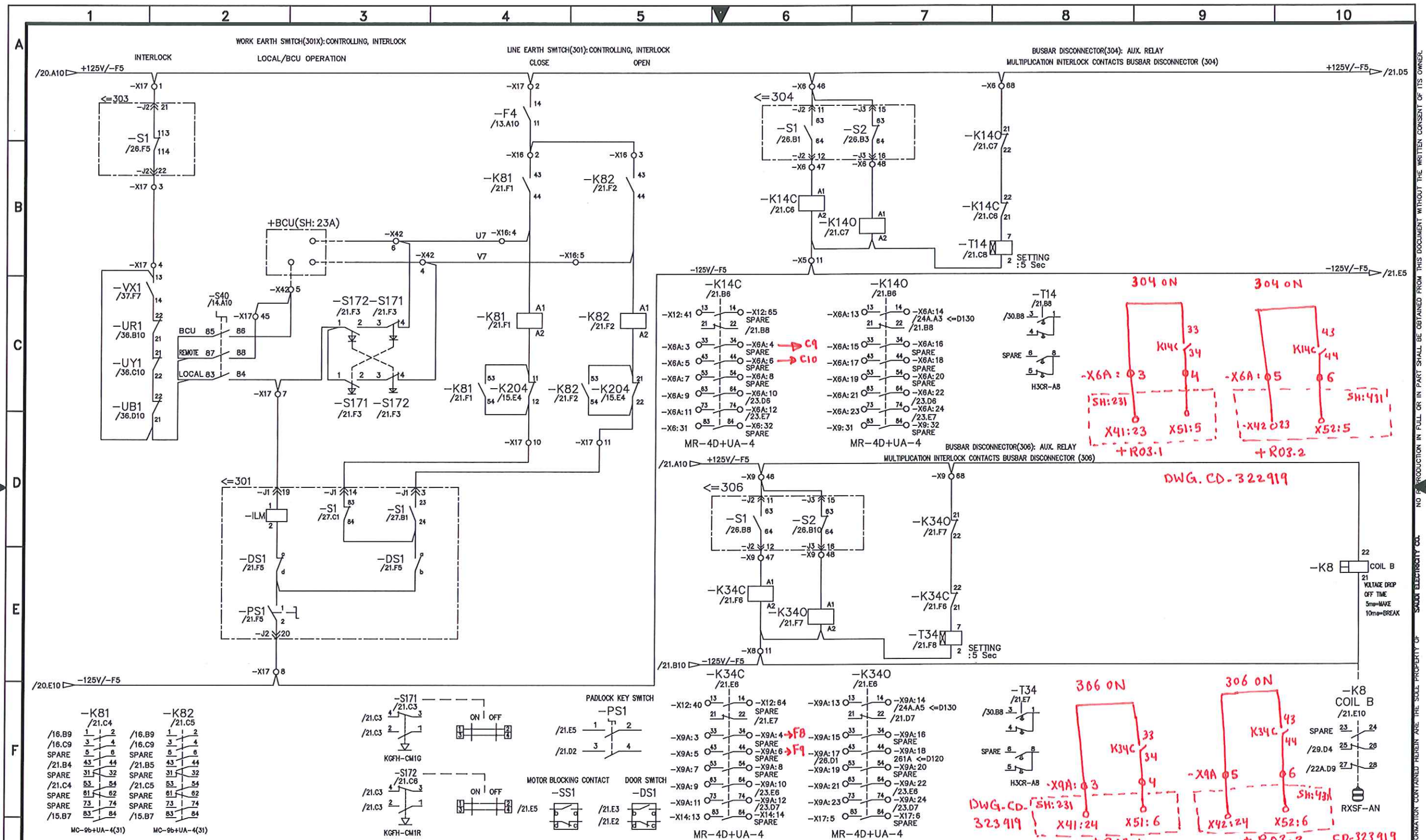
G	AS-BUILT		BY	DATE		SEC-COA 132kV/13.8kV SUBSTATION #8709		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>		SHEET NO.			
						INTERLOCK OF BUSBAR DISCONNECTOR(304/306)				17 of 37			
				DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG	NEXT 18					
	00	10.JULY.12	FOR APPROVAL	DATE STARTED	10.JULY.12	DATE COMPLETED		REV. NO.					
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.		ENG. DEPT.		1113113/00					
							LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
							RIYADH SAUDI ARABIA		1113113/00	P	C421	CA -323942	00



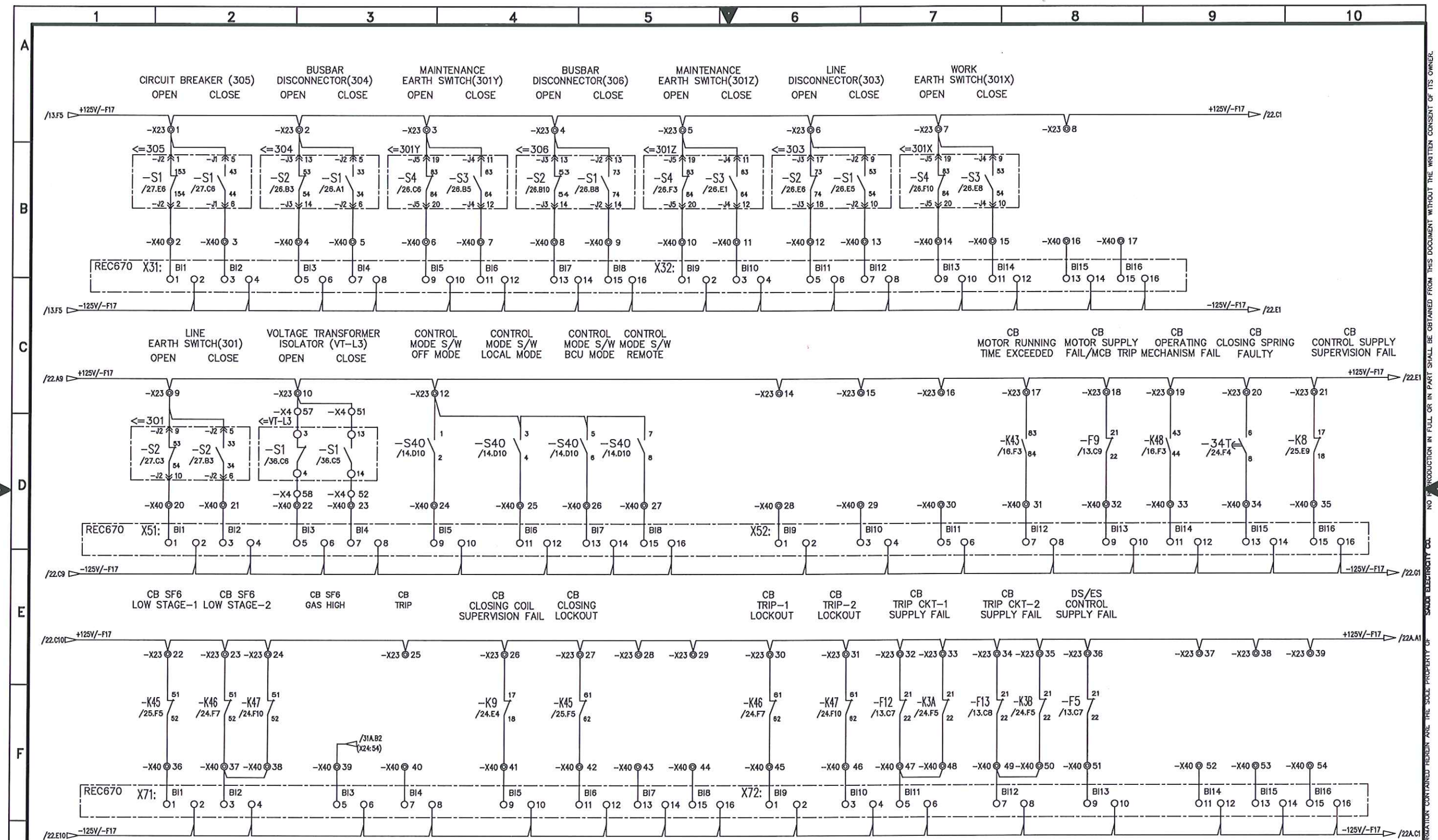
AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	DATE STARTED 10.JULY.12 DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. ENG. DEPT.

SEC-COA 132kV/13.8kV SUBSTATION #8709
 BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(306/301Z): CONTROLLING
 LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
 RIYADH SAUDI ARABIA

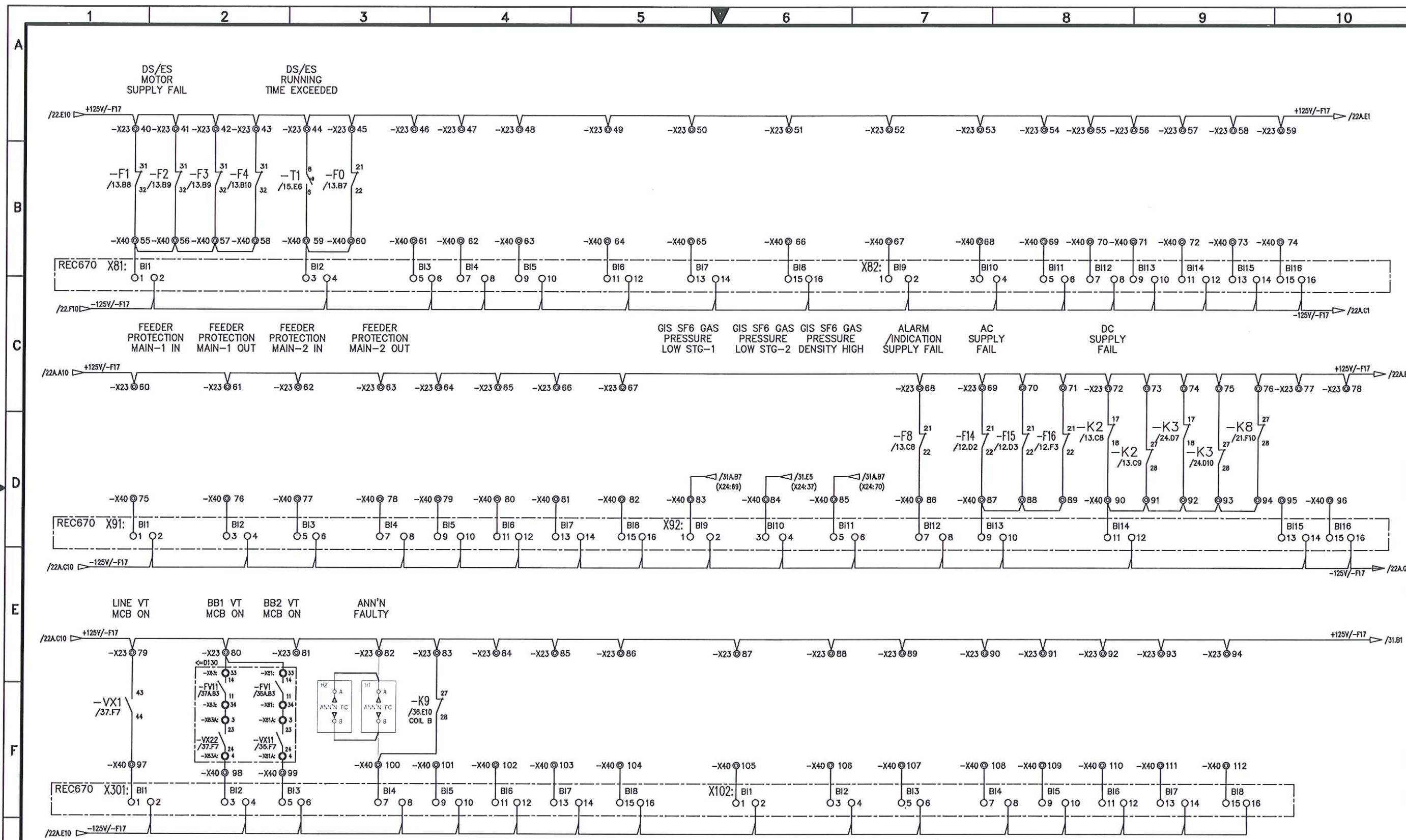
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 19 of 37
National Grid sa		CA -323942		NEXT 20
CONTRACT NO. 11131113/00	INDEX P	PLANT NO. C421	DRAWING NUMBER	REV. NO. 00



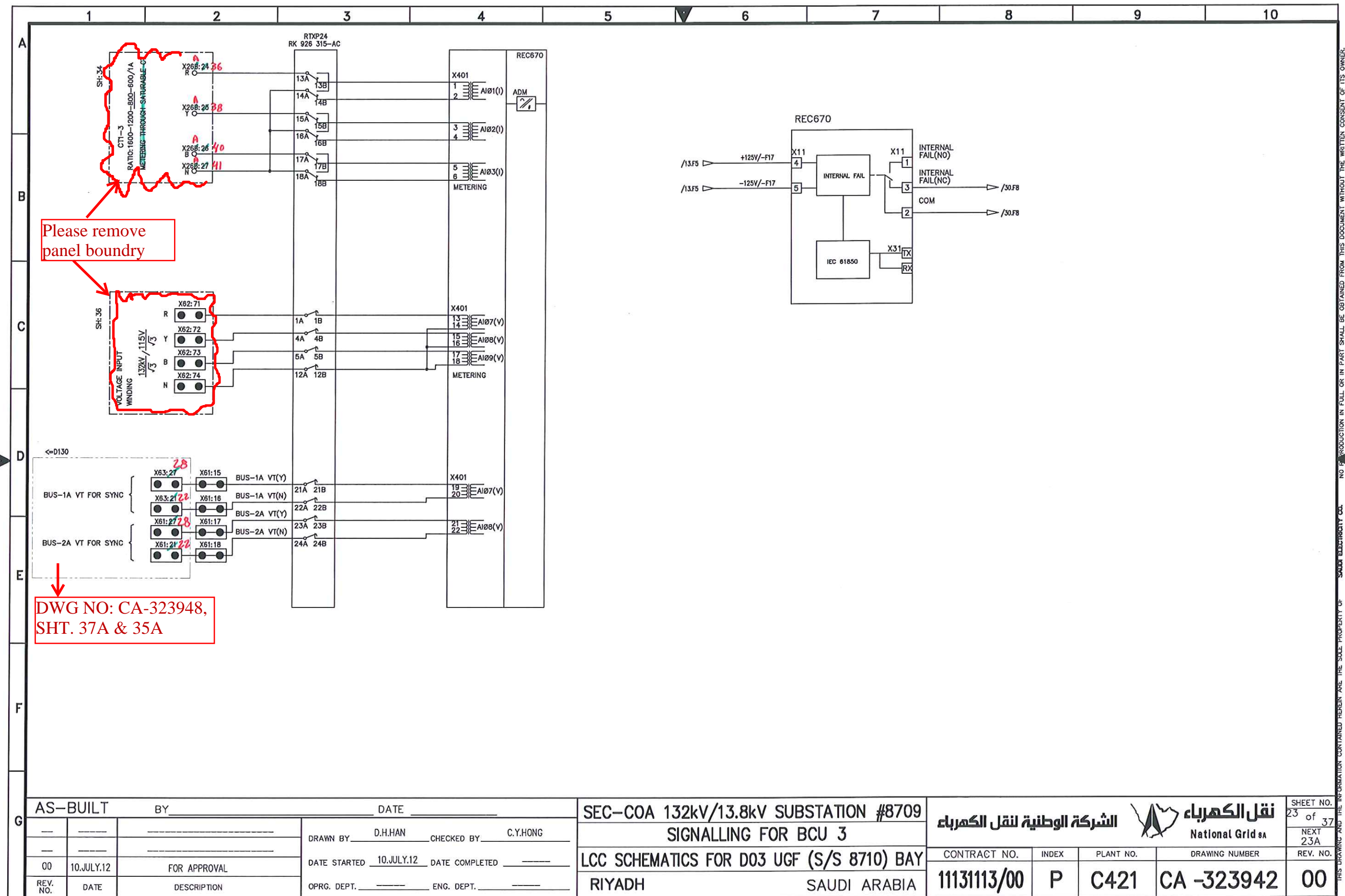
AS-BUILT			BY _____ DATE _____			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 21 of 37		
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG			LINE ES(301):CONTROLLING/BUSBAR DS(304/306): AUX. RELAY			National Grid sa			NEXT 22		
			DATE STARTED 10.JULY.12 DATE COMPLETED _____			LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY			CONTRACT NO. 11131113/00			REV. NO. 00		
			OPRG. DEPT. _____ ENG. DEPT. _____			RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA-323942		



AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		SHEET NO. 22 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		SIGNALLING FOR BCU 1		National Grid sa		NEXT 22A	
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		REV. NO. 00	
			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		INDEX P		DRAWING NUMBER CA-323942	
REV. NO.			DATE		DESCRIPTION		PLANT NO. C421		REVISION	
00			10.JULY.12		FOR APPROVAL					



AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 22A of 37	
				DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		National Grid SA		CA -323942		NEXT 23	
				DATE STARTED 10.JULY.12 DATE COMPLETED		CONTRACT NO. 11131113/00		INDEX P		REV. NO. 00	
				OPRG. DEPT. ENG. DEPT.		PLANT NO. C421		DRAWING NUMBER			
00		10.JULY.12	FOR APPROVAL			SAUDI ARABIA					
REV. NO.	DATE	DESCRIPTION									

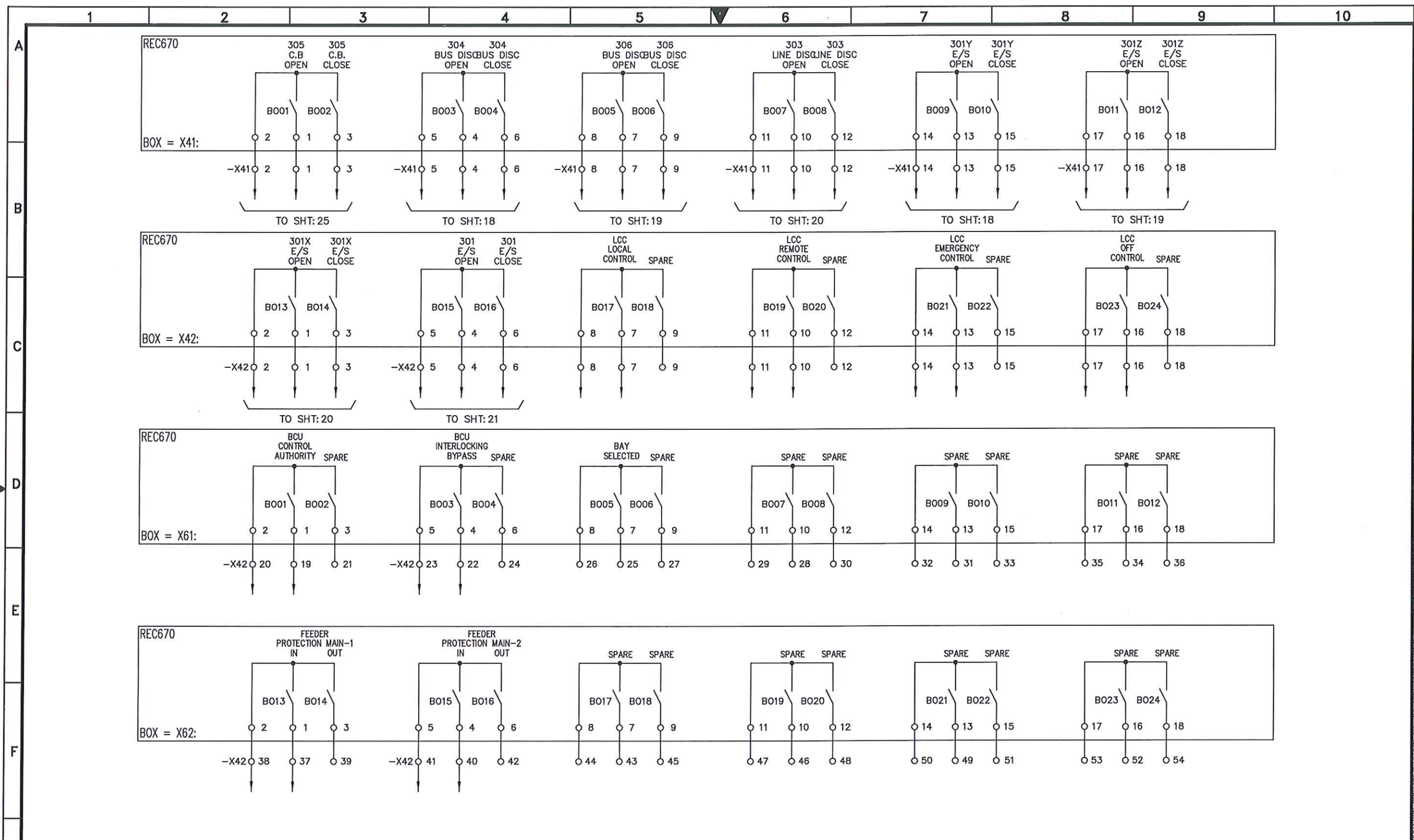


THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

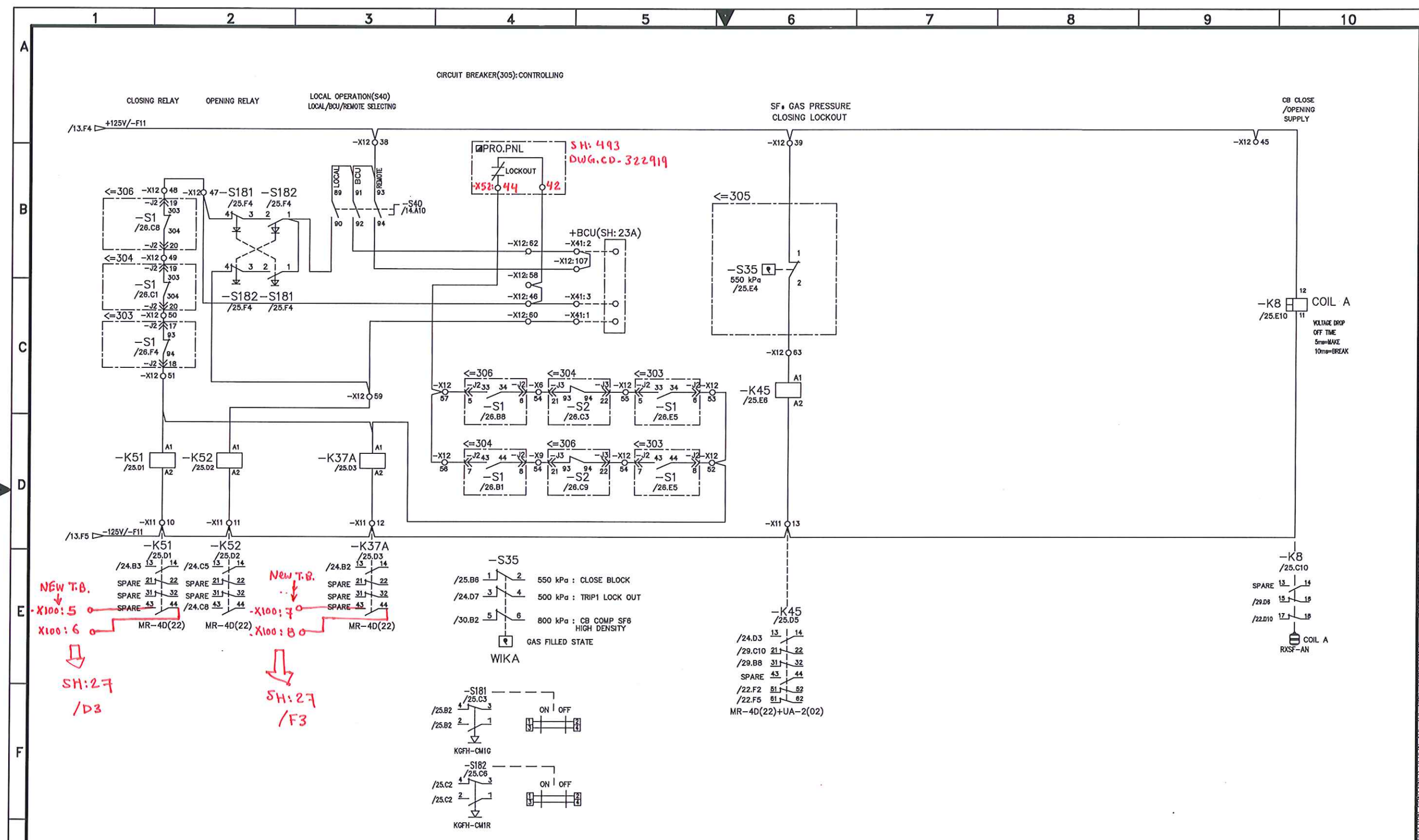
AS-BUILT			BY _____		DATE _____	
00	10.JULY.12	FOR APPROVAL	DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
REV. NO.	DATE	DESCRIPTION	DATE STARTED	10.JULY.12	DATE COMPLETED	_____
			OPRG. DEPT.	_____	ENG. DEPT.	_____

SEC-COA 132kV/13.8kV SUBSTATION #8709	
SIGNALLING FOR BCU 3	
LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 23 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323942	00

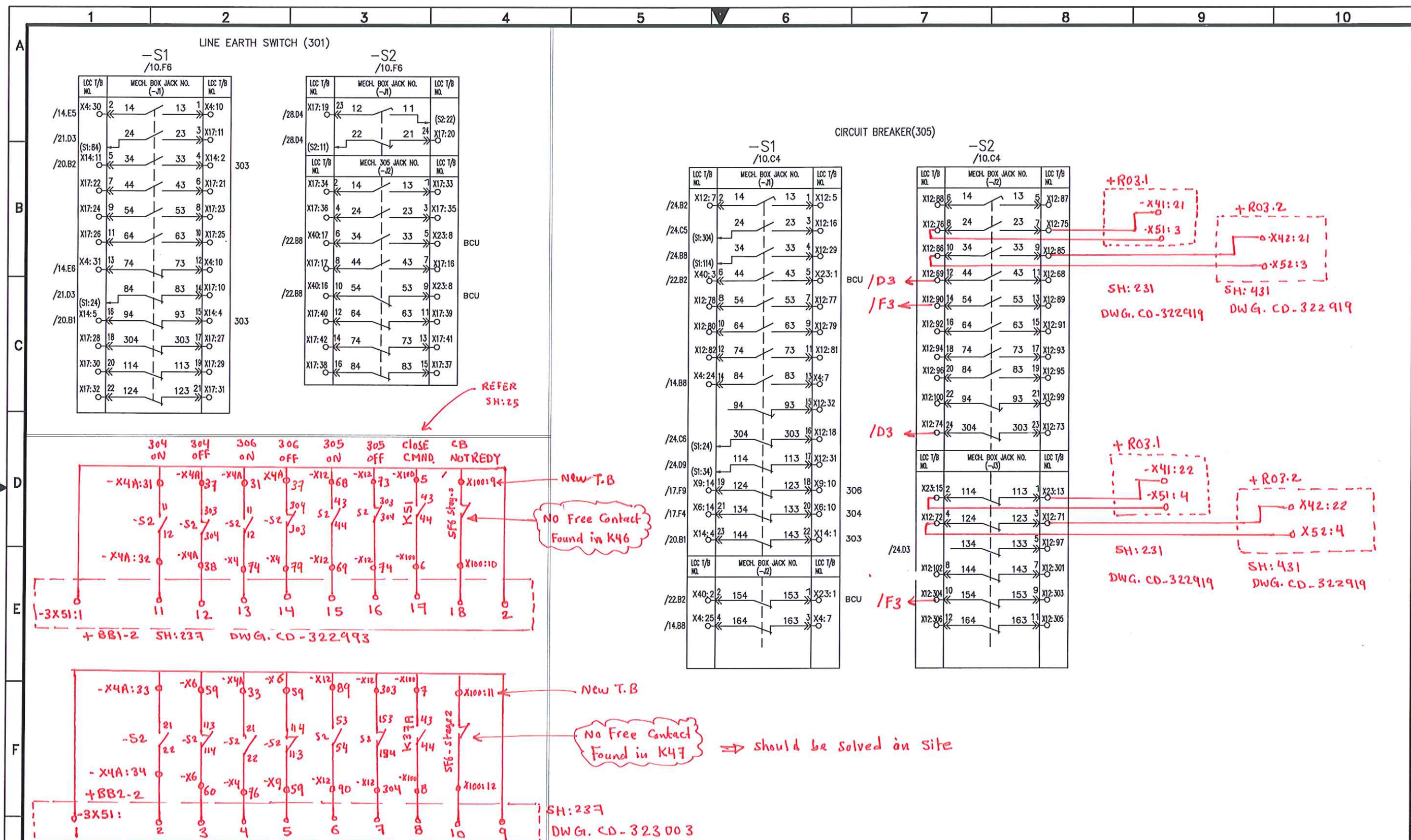


AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		National Grid SA		SHEET NO. 23A of 37
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		SIGNALLING FOR BCU 4						NEXT 24
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		INDEX P		REV. NO. 00
			PRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		PLANT NO. C421		DRAWING NUMBER CA -323942		



AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 25 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		CB CONTROLLING		National Grid SA		NEXT 26		REV. NO.	
00			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
REV. NO.			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		DRAWING NUMBER CA -323942		REV. NO. 00		SEC-D (2004/10)	
DATE			DESCRIPTION								EDMS VECTOR SECE00	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1 2 3 4 5 6 7 8 9 10

A

B

C

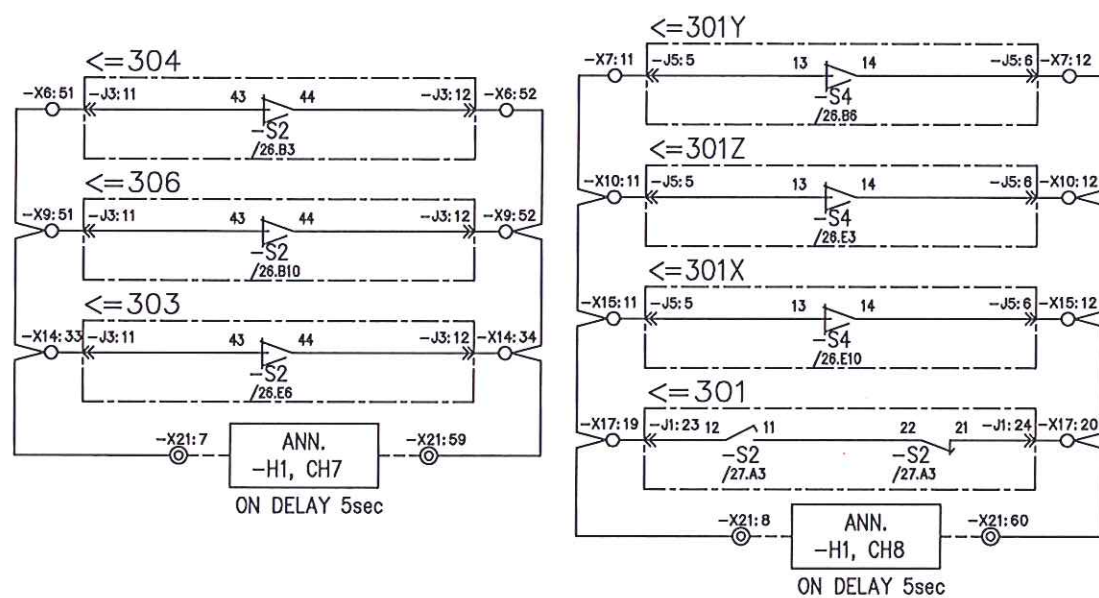
D

E

F

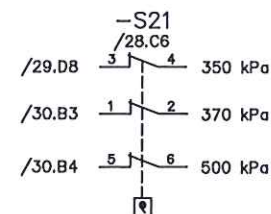
G

DS/ES SWITCHING INCOMPLETE

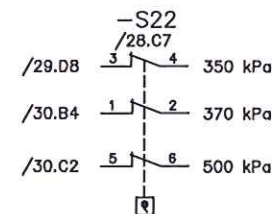


GAS PRESSURE METERING

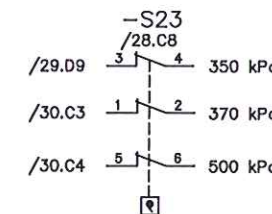
GAS PRESSURE METERING COMPARTMENT G03-1 306+301Z



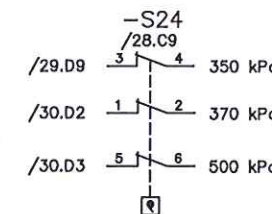
GAS PRESSURE METERING COMPARTMENT G03-2 304+301Y



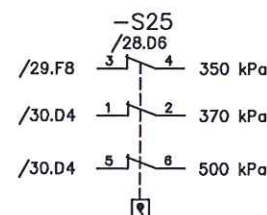
GAS PRESSURE METERING COMPARTMENT G03-3 CT



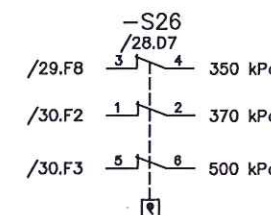
GAS PRESSURE METERING COMPARTMENT G03-4 303+301X



GAS PRESSURE METERING COMPARTMENT G03-5 VT-L3



GAS PRESSURE METERING COMPARTMENT G03-6 CABLE HEAD BOX(-Z2)



* REMARK *

FOR S21~S26, THE RELATED FUNCTIONS OF AUX. CONTACTS ARE AS FOLLOW.

1-2 : SF6 PRESSURE LOW STAGE 1

3-4 : SF6 PRESSURE LOW STAGE 2

5-6 : SF6 DENSITY HIGH

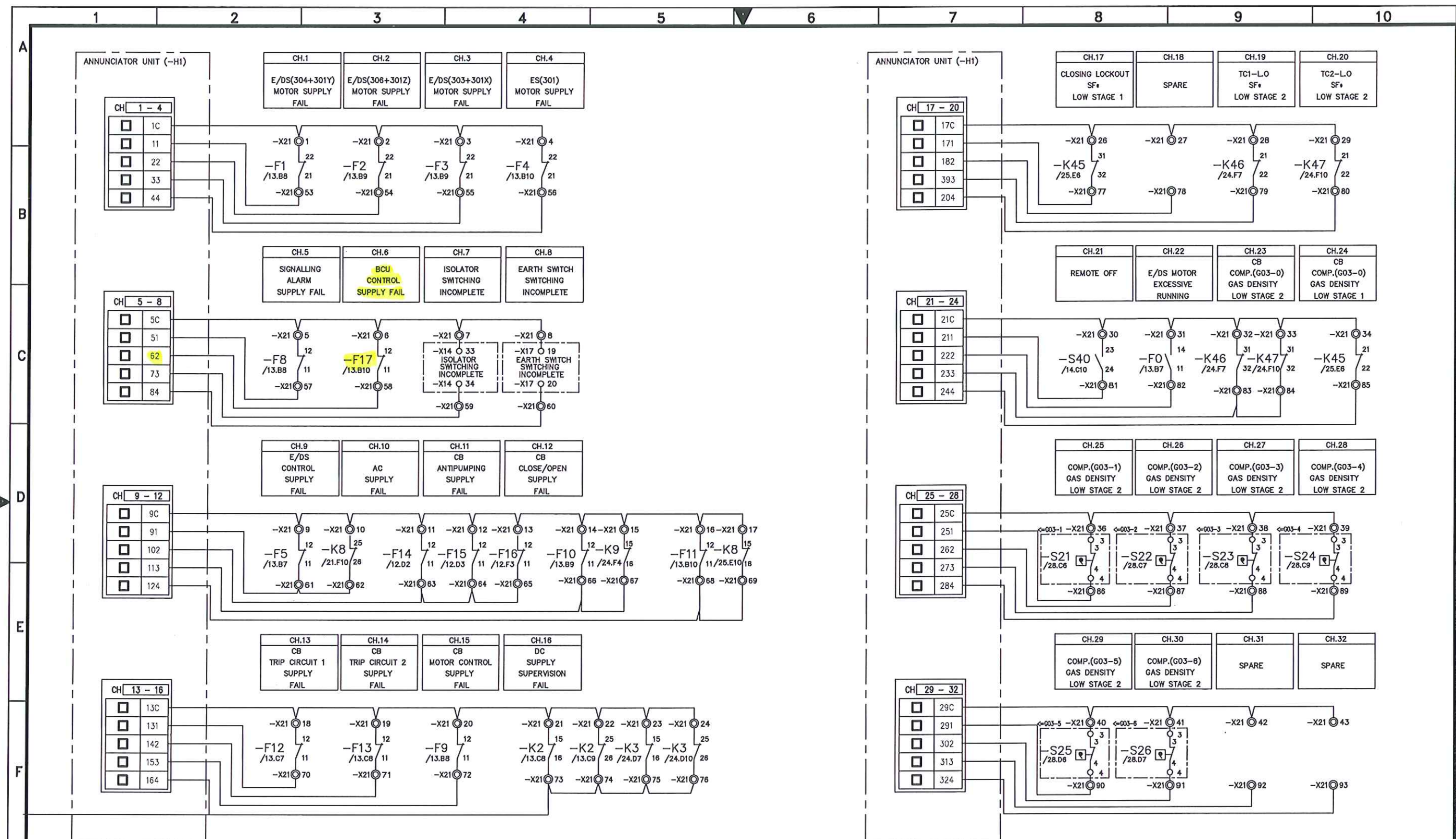
☐ : GAS FILLED STATE

AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

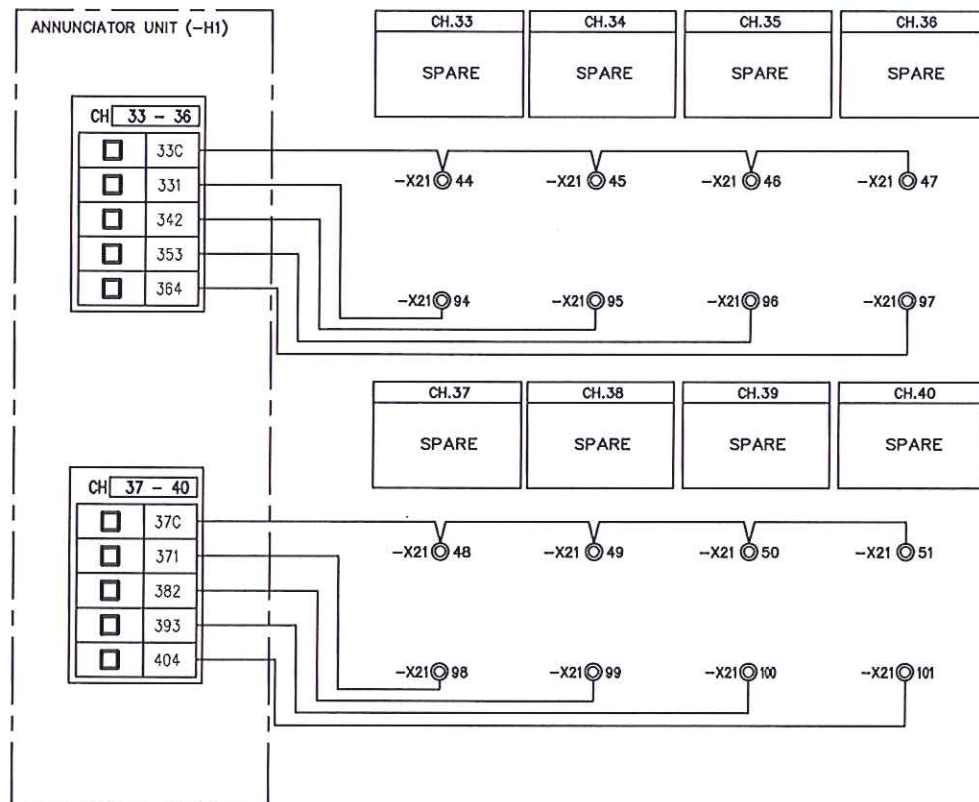
DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/13.8kV SUBSTATION #8709
DS/ES SWITCHING INCOMPLETE & GAS PRESSURE METERING
LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 28 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA-323942	00



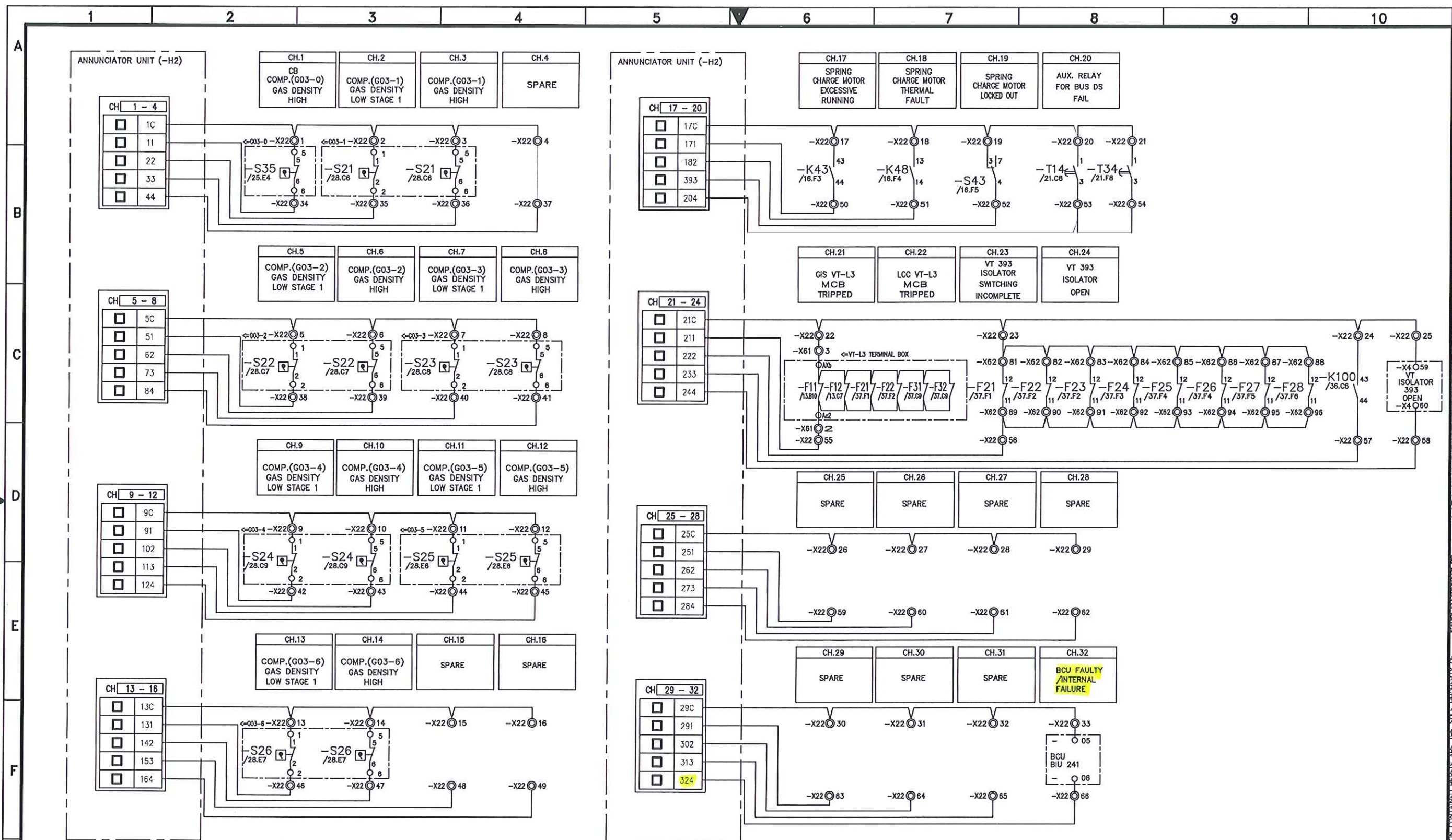
AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 29 of 37
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		SIGNALLING : INPUT ANNUNCIATOR 1						NEXT 29A
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		INDEX P		REV. NO. 00
			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		PLANT NO. C421		DRAWING NUMBER CA-323942		
REV. NO.	DATE	DESCRIPTION									
00	10.JULY.12	FOR APPROVAL									



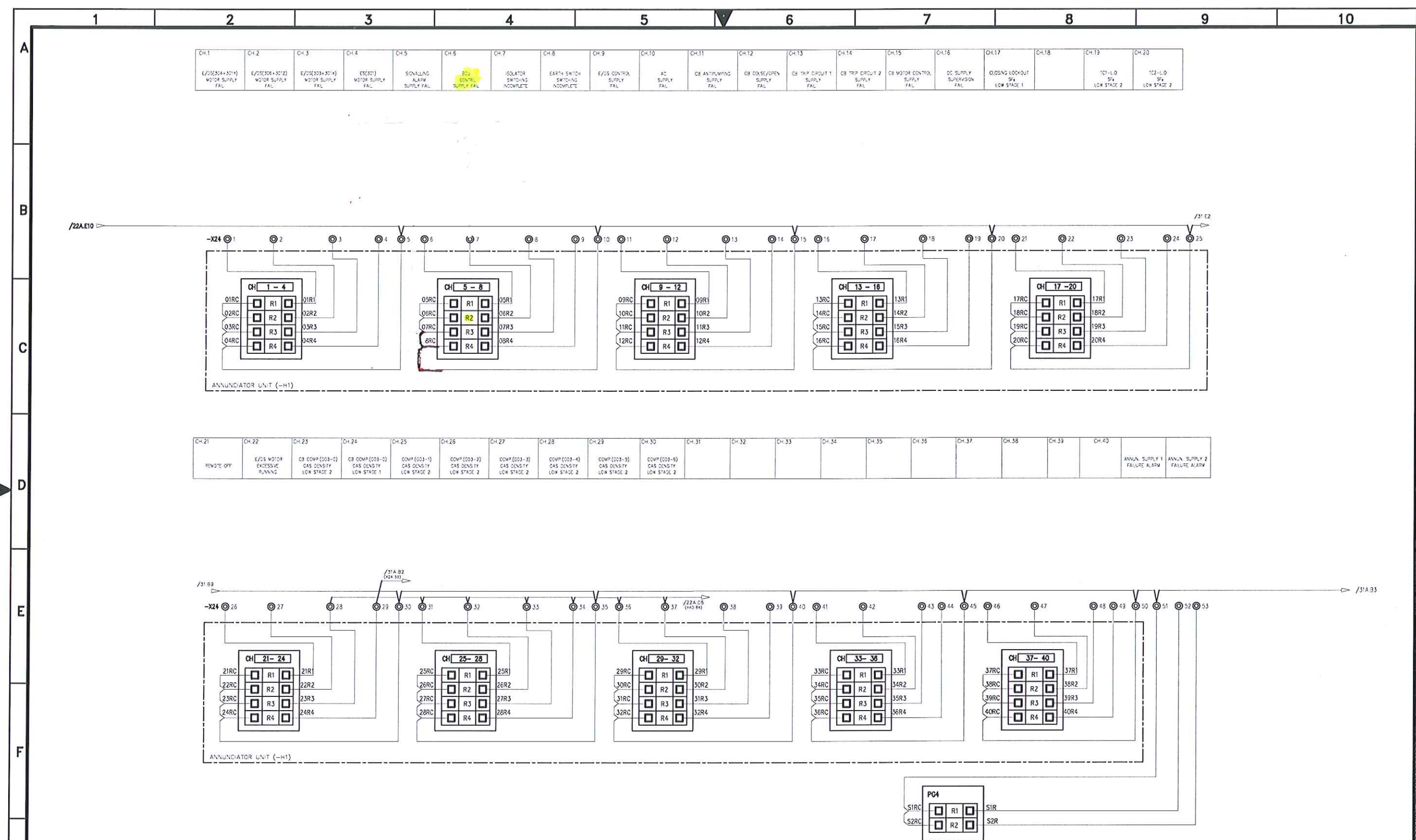
AS-BUILT		BY _____	DATE _____
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	
DRAWN BY D.H.HAN		CHECKED BY C.Y.HONG	
DATE STARTED 10.JULY.12		DATE COMPLETED _____	
OPRG. DEPT. _____		ENG. DEPT. _____	

SEC-COA 132kV/13.8kV SUBSTATION #8709
 SIGNALLING : INPUT ANNUNCIATOR 1
 LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
 RIYADH SAUDI ARABIA

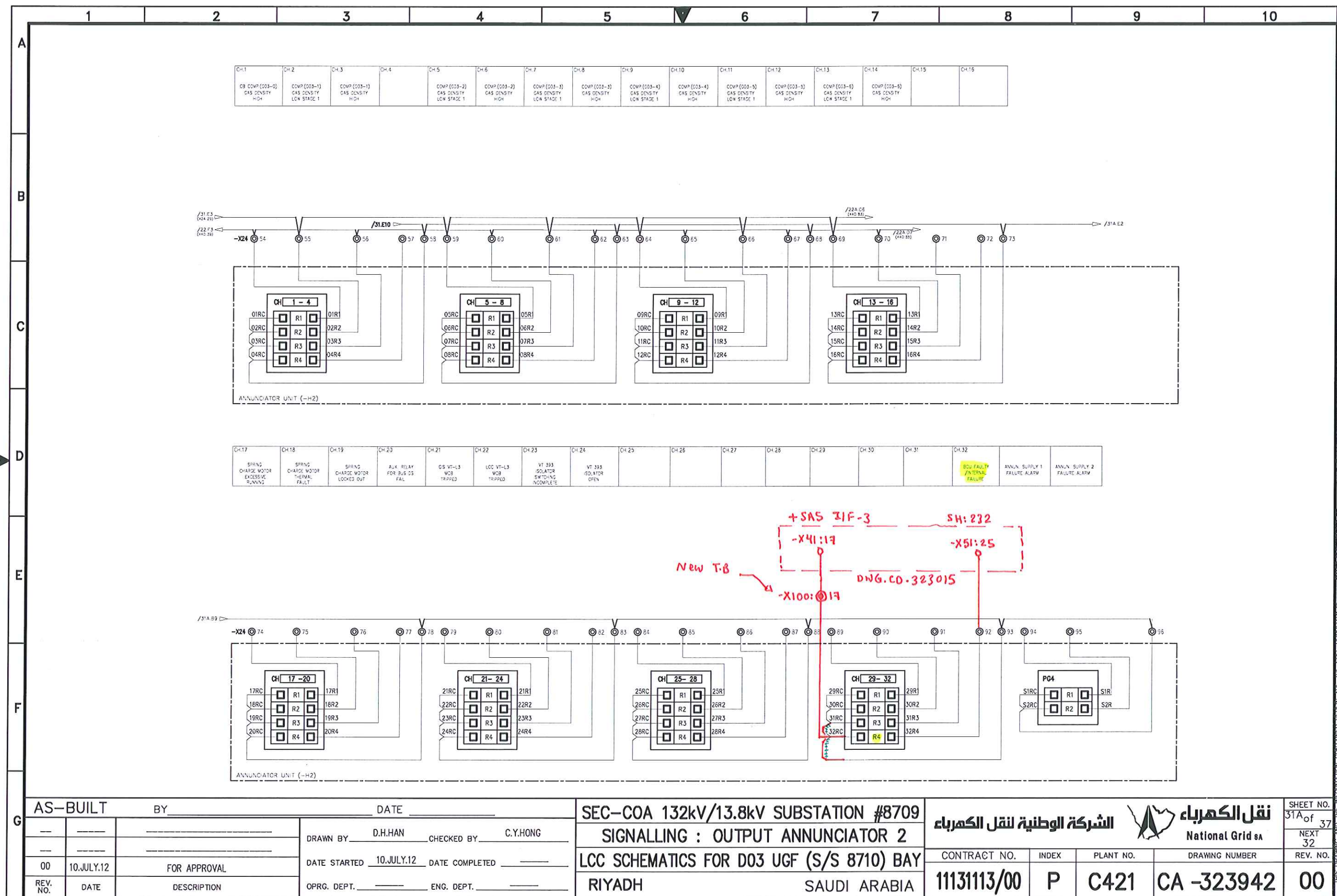
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 29A of 37
National Grid sa				NEXT 30
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323942	00



AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		SHEET NO. 30 of 37	
		DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG	SIGNALLING : INPUT ANNUNCIATOR 2		National Grid SA	
		DATE STARTED	10.JULY.12	DATE COMPLETED		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		REV. NO. 31	
		OPRG. DEPT.		ENG. DEPT.		RIYADH SAUDI ARABIA		REV. NO. 00	
00	10.JULY.12	FOR APPROVAL			CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	
REV. NO.	DATE	DESCRIPTION			11131113/00	P	C421	CA -323942	



G	AS—BUILT			BY	DATE	SEC—COA 132kV/13.8kV SUBSTATION #8709				الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		SHEET NO.	
	—	—	—	DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	SIGNALLING : OUTPUT ANNUNCIATOR 1				National Grid sa				31 of 37			
	—	—	—											NEXT			
	00	10.JULY.12	FOR APPROVAL											31A			
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.	LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY				CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.			
					RIYADH SAUDI ARABIA				11131113/00	P	C421	CA -323942	00				



AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.

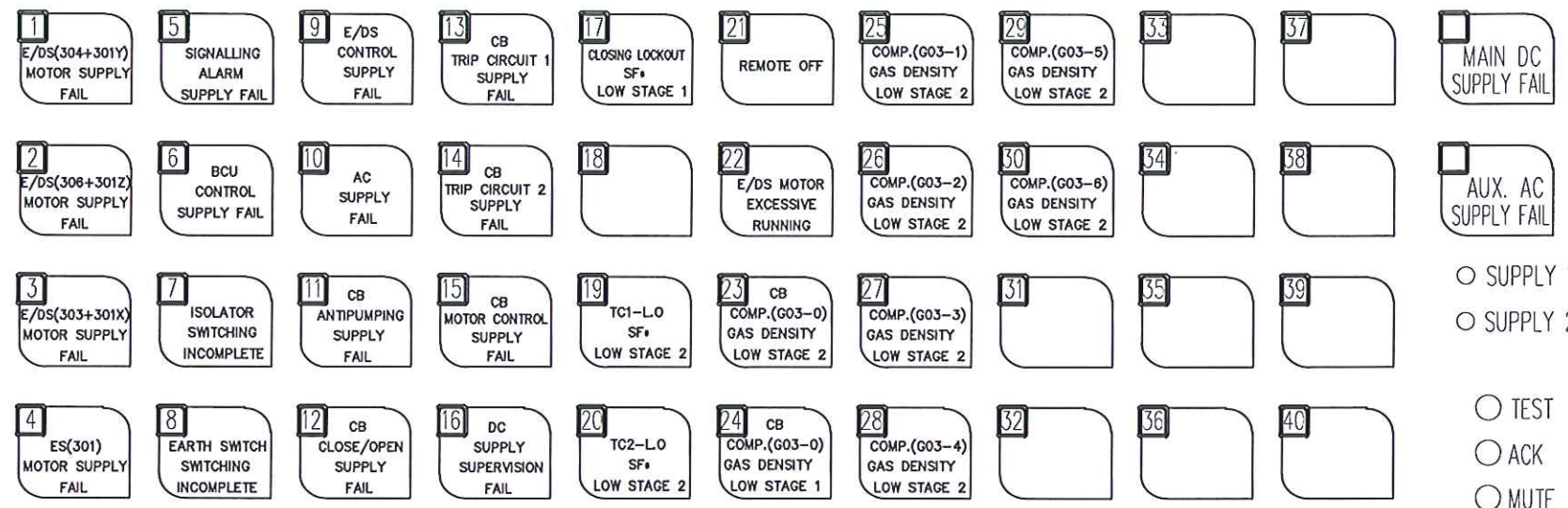
SEC-COA 132kV/13.8kV SUBSTATION #8709
 SIGNALLING : OUTPUT ANNUNCIATOR 2
 LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
 RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
11131113/00	P	C421	CA -323942
SHEET NO. 31A of 37		NEXT 32	
REV. NO. 00		REV. NO. 00	

1 2 3 4 5 6 7 8 9 10

-H1

RTK



- SUPPLY 1
- SUPPLY 2
- TEST
- ACK
- MUTE
- RESET

UC625

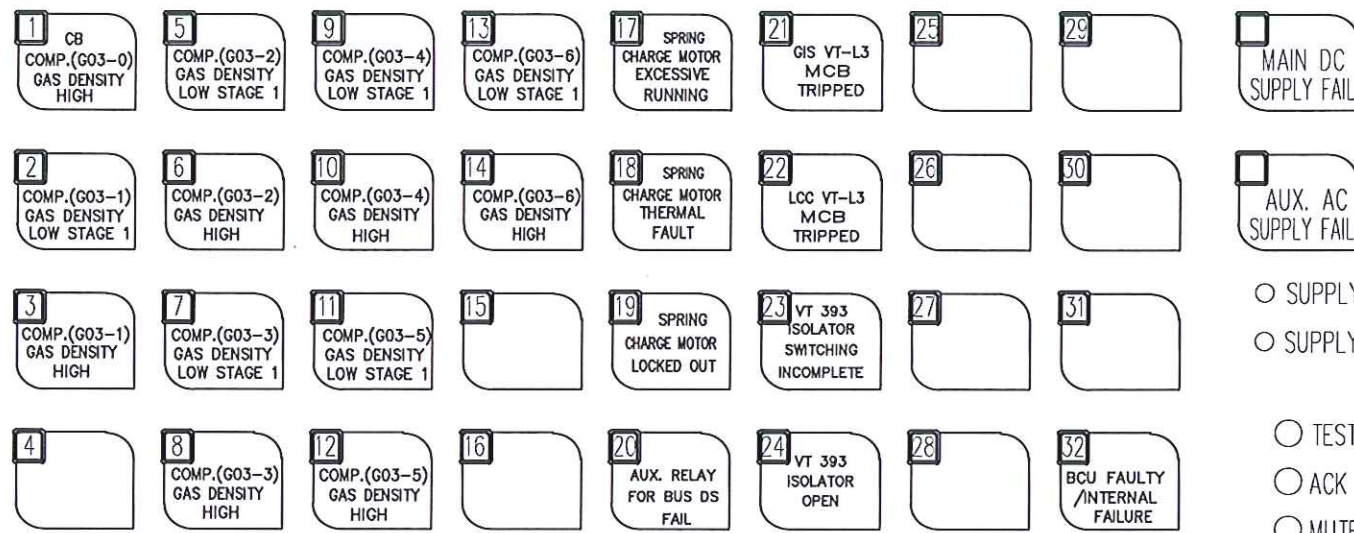
CH.NO. DELAY (SEC.)LED COLOR			CH.NO. DELAY (SEC.)LED COLOR		
1	5mS	YELLOW	21	5mS	YELLOW
2	5mS	YELLOW	22	5mS	YELLOW
3	5mS	YELLOW	23	5S	YELLOW
4	5mS	YELLOW	24	5S	YELLOW
5	5mS	YELLOW	25	5S	YELLOW
6	5mS	YELLOW	26	5S	YELLOW
7	5S	YELLOW	27	5S	YELLOW
8	5S	YELLOW	28	5S	YELLOW
9	5mS	YELLOW	29	5S	YELLOW
10	5mS	YELLOW	30	5S	YELLOW
11	5mS	YELLOW	31	5mS	YELLOW
12	5mS	YELLOW	32	5mS	YELLOW
13	5mS	YELLOW	33	5mS	YELLOW
14	5mS	YELLOW	34	5mS	YELLOW
15	5mS	YELLOW	35	5mS	YELLOW
16	5mS	YELLOW	36	5mS	YELLOW
17	5S	YELLOW	37	5mS	YELLOW
18	5mS	YELLOW	38	5mS	YELLOW
19	5S	YELLOW	39	5mS	YELLOW
20	5S	YELLOW	40	5mS	YELLOW

- 1) MAKER : RTK INSTRUMENTS
- 2) MODEL : UC625-40YW-HH-024-R-M3
- 3) SUPPLY VOLTAGE
 - MAIN SUPPLY : DC 125V
 - AUX. SUPPLY : AC 230V
- 4) LED COLOR : YELLOW
- 5) DELAYED TIME
 - CH7, CH8, CH17, CH19, CH20, CH23~CH30 : 5 SEC.
 - OTHERS : 5 mSEC.

AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 32 of 37
		DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		SIGNALLING : VIEW/FRONT ANNUNCIATOR 1						NEXT 33
		DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY		CONTRACT NO. 11131113/00		INDEX P	PLANT NO. C421	DRAWING NUMBER CA -323942
		OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA						REV. NO. 00
REV. NO.	DATE	DESCRIPTION								

-H2

RTK



UC625

CH.NO. DELAY (SEC.)LED COLOR			CH.NO. DELAY (SEC.)LED COLOR		
1	5S	YELLOW	17	5mS	YELLOW
2	5S	YELLOW	18	5mS	YELLOW
3	5S	YELLOW	19	5mS	YELLOW
4	5mS	YELLOW	20	5mS	YELLOW
5	5S	YELLOW	21	5mS	YELLOW
6	5S	YELLOW	22	5mS	YELLOW
7	5S	YELLOW	23	5S	YELLOW
8	5S	YELLOW	24	5mS	YELLOW
9	5S	YELLOW	25	5mS	YELLOW
10	5S	YELLOW	26	5mS	YELLOW
11	5S	YELLOW	27	5mS	YELLOW
12	5S	YELLOW	28	5mS	YELLOW
13	5S	YELLOW	29	5mS	YELLOW
14	5S	YELLOW	30	5mS	YELLOW
15	5mS	YELLOW	31	5mS	YELLOW
16	5mS	YELLOW	32	5mS	YELLOW

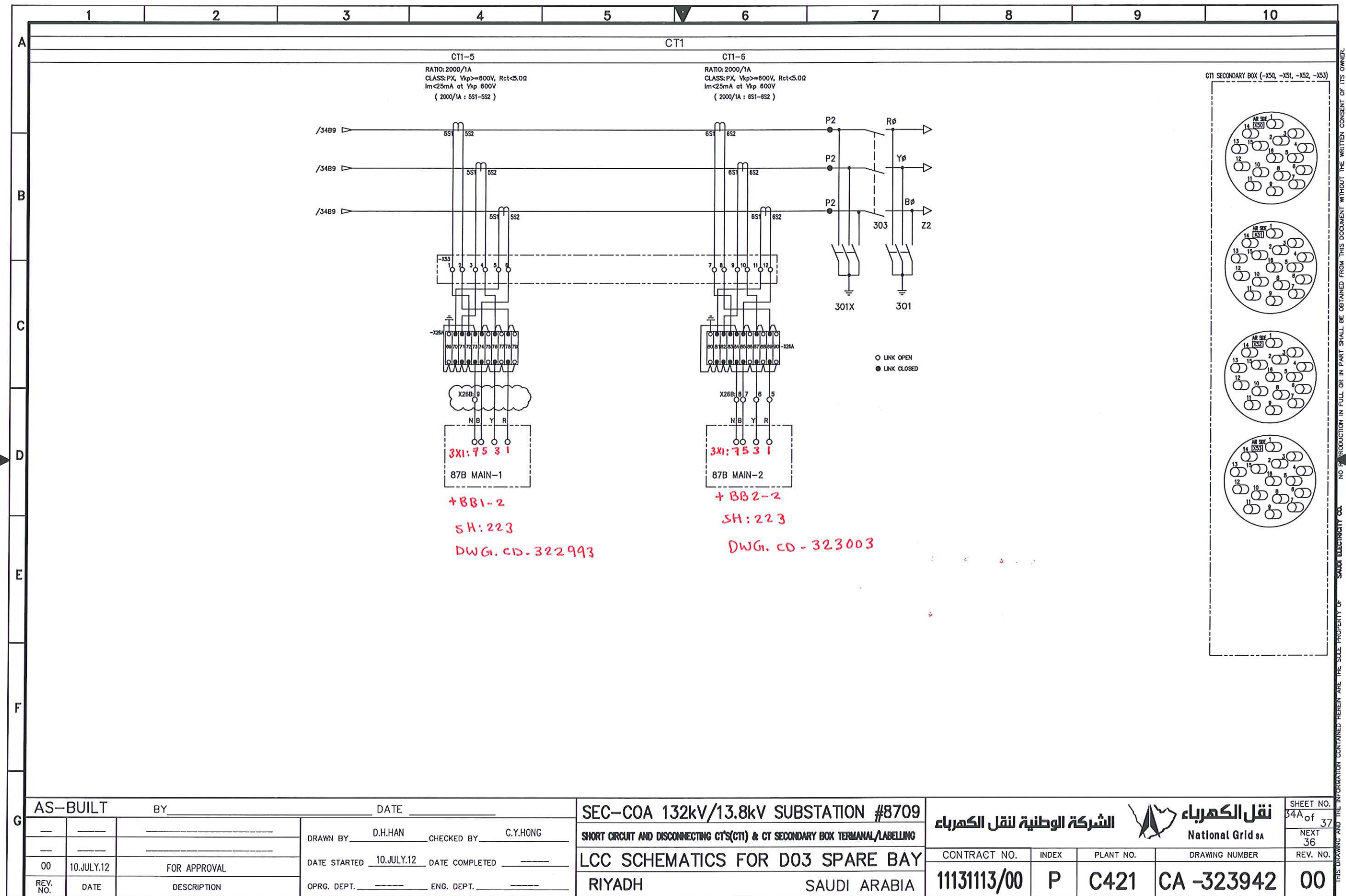
- 1) MAKER : RTK INSTRUMENTS
- 2) MODEL : UC625-32YW-HH-024-R-M3
- 3) SUPPLY VOLTAGE
 - MAIN SUPPLY : DC 125V
 - AUX. SUPPLY : AC 230V
- 4) LED COLOR : YELLOW
- 5) DELAYED TIME
 - CH1~CH3, CH5~CH14, CH23 : 5 SEC.
 - OTHERS : 5 mSEC.

AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY D.H.HAN CHECKED BY C.Y.HONG
DATE STARTED 10.JULY.12 DATE COMPLETED
OPRG. DEPT. ENG. DEPT.

SEC-COA 132kV/13.8kV SUBSTATION #8709
SIGNALLING : VIEW/FRONT ANNUNCIATOR 2
LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO.	
		National Grid sa		33 of 37	
				NEXT 34	
				REV. NO.	
CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER	
11131113/00		P	C421	CA -323942	
				00	



الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

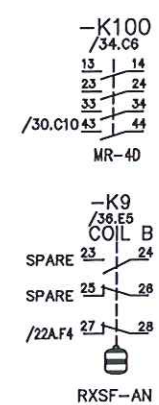
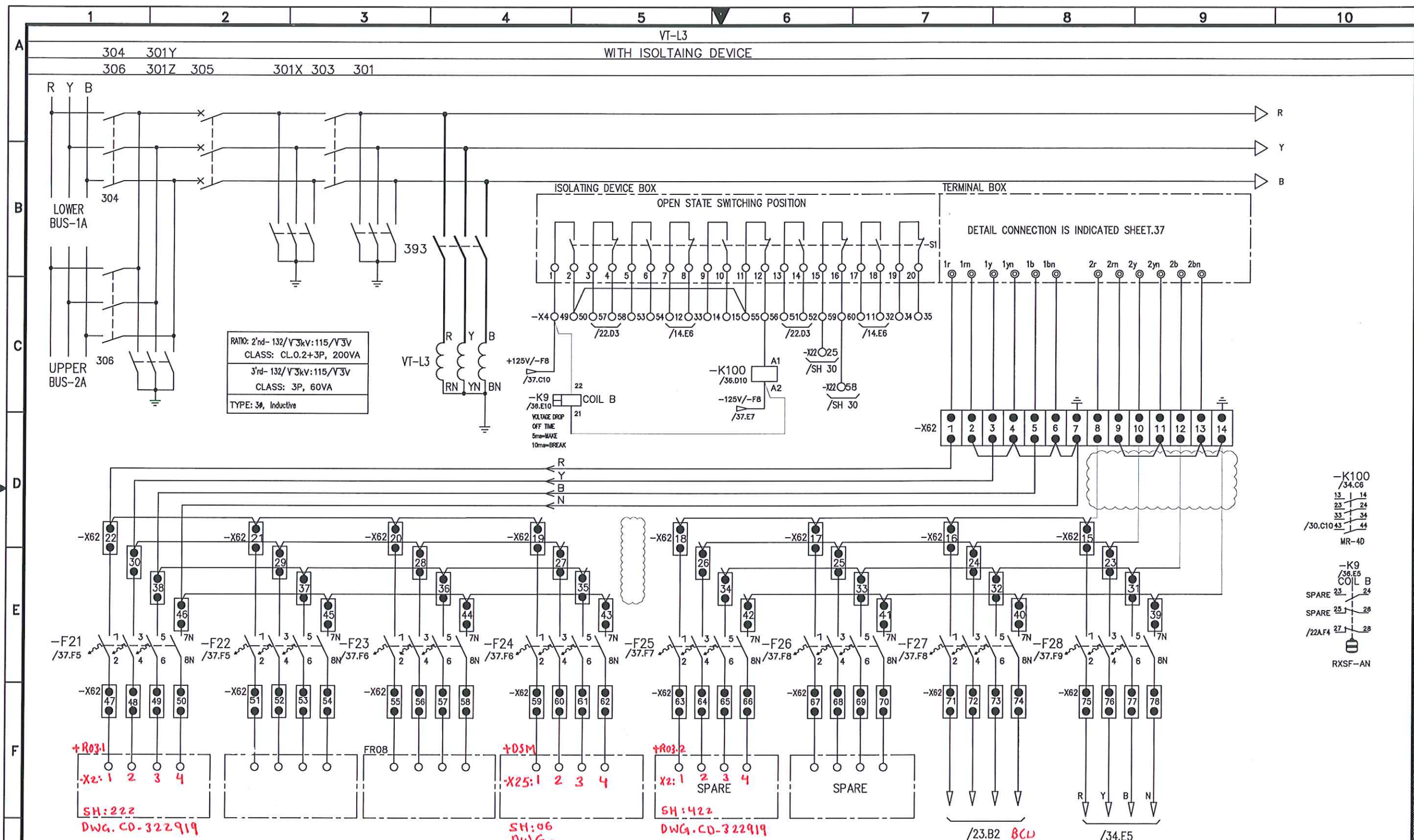
National Grid sa

SHEET NO. 34A of 37

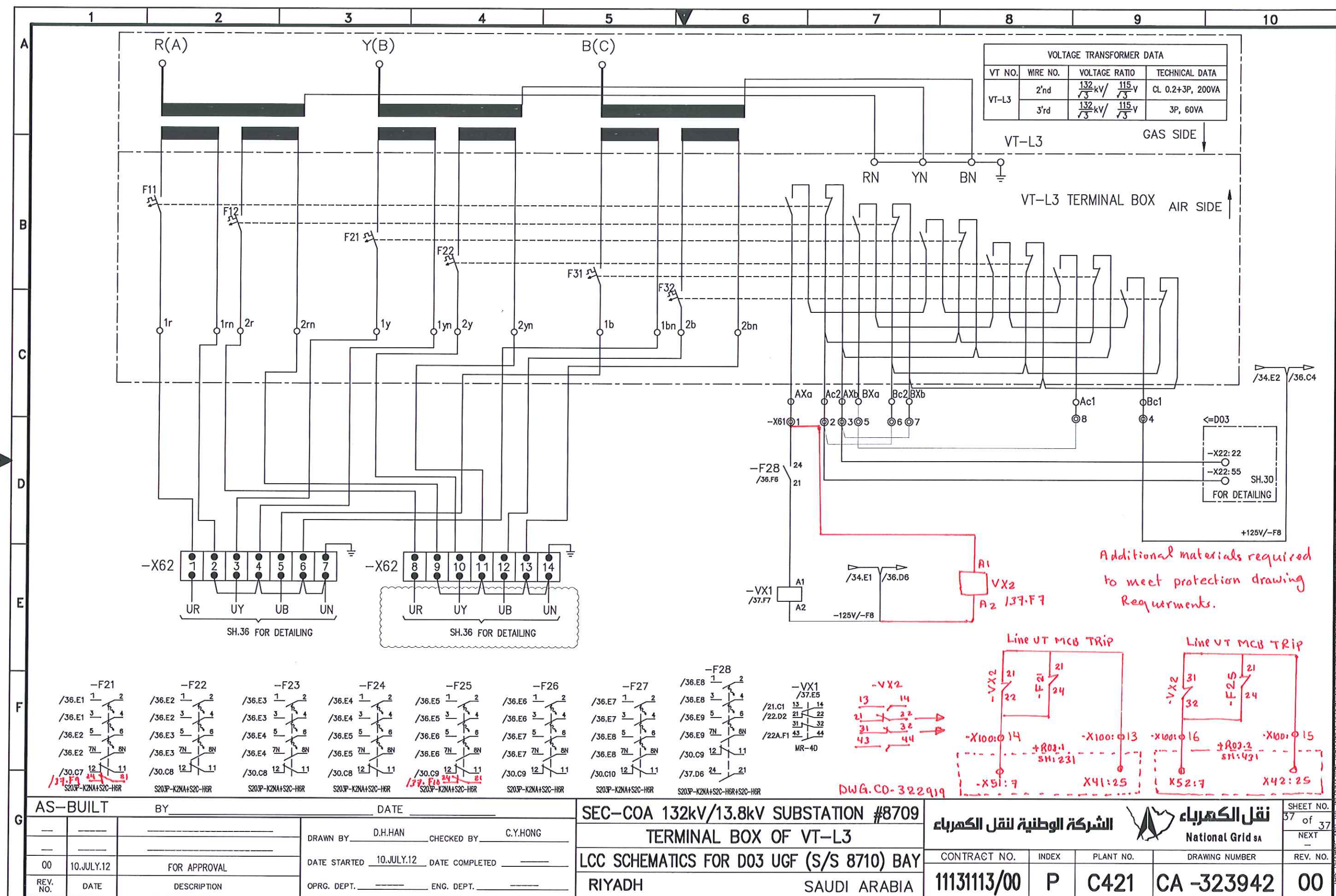
NEXT 36

REV. NO. 00

CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
11131113/00	P	C421	CA -323942



AS-BUILT			BY			DATE			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 36 of 37		
									VOLTAGE TRANSFORMER(VT-L3)			National Grid sa			NEXT 37		
									LCC SCHEMATICS FOR D03 UGF (S/S 8710) BAY			CONTRACT NO. 11131113/00			REV. NO. 00		
									RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA-323942		
												PLANT NO. C421					



Additional materials required
to meet protection drawing
Requirements.

